

# **Journalism in absentia: Reporting medical research in the Irish print media**

## **ABSTRACT**

The media is the primary source of scientific and medical information for most people after they leave school. Media reporting of medical stories has been shown to influence health behaviours, from vaccination uptake to rates of mammography screening. Accurate, informed reporting on medical research is, consequently, essential. A number of studies have shown the importance of press releases in bringing medical research to the attention of the news media (Entwistle, 1995; de Semir, Ribas & Revuelta, 1998; Barlett, Sterne & Egger, 2002). All of these studies were limited to analysis of news coverage of press released research from a small number of major journals. The current study sought to determine how much medical reporting in Irish newspapers is influenced by public relations activity, regardless of its source. 120 newspaper articles from seven Irish national dailies were studied, of which 70% were found to be derived wholly or mainly from public relations material. The influence of wire copy in the Irish print media was also incorporated into the analysis. 77% of all articles were based on research that had been press released. Where a press release existed, only 32% contained information above and beyond that in the press release. Combining wire service copy and press releases and performing a more detailed analysis, only 16% of all articles were not verifiably derived wholly from either PR or agency copy. Factual accuracy in reporting was also assessed, and 54% of all articles were found to be factually inaccurate. The implications of the reliance on public relations and wire copy uncovered in this study are briefly considered, but its narrow field of enquiry precludes the inference that the Irish print media as a whole is as reliant on them as was found here. More research is needed to determine if this is in fact the case. The implications for public health of a news media dependent on vested interests for their information and which shows little regard for the evidence base of medical research are also considered.

## **INTRODUCTION**

### **The significance of science in the media**

Numerous studies have shown that the media is the primary source of scientific information for the public after they leave school (Detjen, 1995; Nelkin, 1995; in an Irish context, Trench, 2007 - although he admits that this claim is difficult to test rigorously). Conrad (1999, p. 285) says 'Science journalists [are] gatekeepers for the infusion of scientific information into the public sphere'. Not alone does coverage of science issues have an effect on the lay public, it may also influence the process of science itself. In an

ingenious study, Phillips et al analysed the citation rates of papers covered in the New York Times against those which had not, and found that the former group received 73% more citations in the science literature. Addressing the possibility that coverage in the Times was simply a marker of the most important articles, which would have a higher citation rate anyway, they also performed the comparison during a three month period when the paper was on strike. During these three months journalists on the Times continued to prepare a 'paper of record' which wasn't published; the study found that the stories which were written about in the paper of record did not receive more citations, leading the authors to conclude that the popular press influences the transmission of research to the scientific community (Phillips, Kanter, Bednarczyk & Tastad, 1991). The effect of the coverage of science issues on public attitudes and behaviour is difficult to assess, for many reasons (Gregory and Miller, 1998) but there is evidence that the media can influence people's behaviour in some instances (Grilli, Ramsay, Minozzi, 2002; Miller, 1999). For example, coverage of the ozone controversy led to people buying fewer aerosol sprays (Nelkin, 1995) or, anecdotally, the decline in MMR vaccine take-up coincident with the most fevered reporting of its alleged link with autism (English Health Protection Agency, 2005). Logan, Fears & Wilson (1997), in an examination of coverage in the late 1980s of risks from exposure to electromagnetic fields, argue this coverage influenced the implementation of regulatory statutes in several US states, despite a National Academy of Sciences review concluding that the available research was equivocal on the link between exposure and health risks. They suggest that 'journalists can inadvertently initiate a process in which legislation gets ahead of scientific evidence'.

### Scientists vs journalists: an overview

The clash of cultures between science and journalism has been the subject of long debate in the science communication literature (Trench, 2007). Science is slow and precise, while journalism is fast, short, and often imprecise (Hartz and Chappell, 1997). The language used in each field is quite different. The language of science is guarded and qualified, while journalists make much use of metaphors, and are principally concerned with making their writing readable, simple, understandable and entertaining (McCall, 1988; Anton and McCourt, 1995; Nelkin, 1995).

Scientists have frequently pointed out that the media ignore both the process and the substance of science (Nelkin, 1995). The reliance of journalists on pre-packaged information such as press releases and staged events for science information has come in for a good deal of criticism (Shepherd, 1979; 1981; Nelkin, 1995; Agnell, 1996; Saari, Gibson & Osler, 1998), as has the tendency to cover science in an episodic fashion, with an emphasis on 'breakthroughs' and 'magic bullets' (Wilkins and Patterson, 1987; Logan, 1998). The tendency of the media to cover emerging, or 'breakthrough' science as fact,

despite its preliminary data being, perhaps, very tentative has also been frequently criticised (Nelkin, 1995; Logan et al., 1997; Logan, Zengjun & Wilson, 2000b).

### Science reporting in Ireland – content

A 2001 ENSCOT funded study by Holliman, Trench et al. found that 87% of science stories in Irish newspapers were drawn from the life sciences, particularly biomedics. A follow-up study in 2006 found an even stronger bias towards medical issues, with the authors citing the arrival in the Irish market of the *Irish Daily Mail* as going some way to contributing toward a trend for the 'medicalisation' of science coverage - a trend first highlighted by Martin Bauer (1998).

### Peer review and evaluating research

To get a paper published, scientists submit their research findings to a journal, which sends them out to be assessed for competence, significance and originality, by independent qualified experts who are researching and publishing work in the same field (Brown, 2004, p. ix). This process, of peer review, functions to assess the plausibility of research claims, but a paper that has been peer reviewed and published in an academic journal is still a working paper. For example, a case study of a single individual with a particular illness may pass through the peer review process and end up published in the *Lancet*, but this single case study functions only to flag up possible directions for future research - no conclusions can be drawn from a single case study. Similarly, studies with small samples; laboratory studies of micro-organisms; and animal studies all function to point out future directions for research; in and of themselves they cannot be applied to the real world of human health, pending such future research.

This brief explication of what peer review does is very important in the context of the current study. While peer review is the gold standard in medical research, publication in a peer reviewed journal cannot be conflated with significance, nor is it a surrogate marker for real world applications. It is simply a signifier of a study's internal consistency: namely, that the study has been vetted by a panel of experts and found to have been carried out competently, its significance (in a possibly very narrow field) has been agreed upon, and it has been judged to add to something to its (once again possibly very narrow) field of enquiry.

For the purposes of this study a sharp distinction will be drawn between research which has been through the peer review process, and whose methods and results are available to anyone who cares to ask for them, and research that has yet to go through this process, is unpublished, and whose methods and results are not available for scrutiny.

The peer review system is not flawless, which is another reason why studies published in academic journals are characterised as working papers. Errors can be made, and are made, and studies with flawed methodologies do slip through the net. This is why research is published - so it can be read and reviewed by a wide audience, who are invited to highlight and comment on putative flaws, and to design and conduct similar studies with these flaws excised.

Ben Goldacre (2008, p. 221) has argued that this open review process is more important than peer review, and the current study will look at whether or not journalists, as 'gatekeepers of scientific information' are engaging critically with research, as journal publication encourages them to do.

### Accuracy

Many surveys have found that scientists' main complaint about press coverage is that it is inaccurate (Dunwoody, 1993) or incomplete (Tankard & Ryan, 1974; Pulford, 1976; Borman, 1978; Pellechia, 1997) especially when it comes to methodological details (Dunwoody, 1986; Goldstein, 1986; Pellechia, 1997). This view is not unanimous, however - Wilkes & Kravitz (1992), using interviews with first authors of science papers, found that 86% rated coverage of their studies as accurate. This echoes previous findings that accuracy ratings are higher when scientists are asked to evaluate news reports of their own work than when they are asked to evaluate science reporting in general (Tichenor, Olien & Donohue, 1970; Pulford, 1976; Dunwoody & Scott, 1982). However, Bubela & Caulfield (2004), in an analysis of gene discovery stories in the Canadian print media (one which was not based on interviews) found that 82% of the newspaper reports assessed contained 'no significant technical or scientific errors'.

While journalists may be largely successful in correctly reproducing the figures produced in journal articles, they are less successful in putting these figures in context. Methodological details are crucial if the results of a study are to be rendered meaningful (Tankard & Ryan, 1974). Despite this, Singer (1990), in a comparison of news reports of scientific studies in the American media with the original research articles found that 48% gave no mention of research methods at all; of those that did mention research methods, 35% gave inadequate information, and 7.1% presented methodological information that was simply wrong.

Another 1990 study found that it was not common practice to include methodological details in newspaper reports (Evans, Krippendorff, Yoon, Posluszny & Thomas, 1990); a finding replicated by Pellechia (1997) in an analysis of three prestige US newspapers over three decades. Also frequently found to be lacking in science stories are qualifying statements or other information that would limit the findings or conclusions of the

research (Dunwoody, 1986; Goldstein, 1986). Adequate information is crucial 'to meet the needs of an intelligent nonspecialist who wants to evaluate the situation being reported on' (Klaidman, 1990, p.120). In the absence of such information, it is hardly surprising that Hargreaves, Lewis and Speers (2003) found 79% of respondents reporting that they at least occasionally 'felt confused about scientific issues'.

The current study will not attempt to evaluate the adequacy of newspaper reports on medical research, as such an evaluation would require a number of coders, ideally representing a range of scientific and journalistic backgrounds. Even if this were feasible, there is every chance that subjective evaluations of this nature would simply feed back into the arguments about the differing aims and styles of writing for journal publication and writing for newspapers. Instead, the current study will assess accuracy on two simple measures: whether the newspaper article has successfully reproduced the numerical results of a study, and whether it is factually accurate (with regard to the characteristics of a sample; the nature of an intervention; the kind of study it is - laboratory, animal or human; the outcome of the study - rather than the implications, and so on). Without accuracy in these foundational elements, a newspaper report can only be inadequate.

### Public Relations and Press Releases

A number of studies have examined the correlation between a research report being press released by a major science journal and its subsequent coverage in the press. De Semir, Ribas & Revuelta (1998), in a study of 142 newspaper articles referring to studies published in the British Medical Journal, Science, Nature and the Lancet found that 84% referred to studies that had featured in press releases. Entwistle (1995) found a similar congruence, with studies in the BMJ and the Lancet which had been press released accounting for 86% of subsequent newspaper stories. Bartlett, Sterne & Egger (2002) found an even more extreme correlation, with every article in the Times and the Sun which reported on studies from the BMJ and The Lancet having been press released.

Public relations officers and press releases are rarely cited as sources in newspaper reports - in the Hargreaves et al. (2003) survey above they are quoted as a source in 1%, 6% and 5% of MMR, GMR and climate change stories respectively. Bubela & Caulfield (2004) found a similar reticence in citing press releases as source - only 2 articles out of 627 studied did so.

This is interesting in the context of a (possibly unrepresentative) quote from a science journalist in Hargreaves and Ferguson (2000):

“Scientists are useless, which is why there are armies of PR people in universities, research councils and funding agencies. In fact when you are not dealing with a straight good news science story, and instead with any kind of story with an implication for how science appears or what it plans to do, it is almost impossible to get past the PR people and talk to a real scientist”.

It is conceivable, therefore, that a story may 'quote' a scientist, but that this quote has been derived from PR personnel or a press release drawn up by the PR department of the institution the scientist works in. However, health correspondents interviewed by Entwistle (1995) said they would not rely on press releases alone as a source for their stories, and regarded access to the full text of the journal article as essential to provide them with adequate information for their story. As these claims were self-reported, they are, perhaps, questionable. A simple way to overcome the unreliability of self-report, in this context, is to compare texts. If a newspaper article contains information above and beyond that contained in a press release associated with a peer reviewed study, it can be surmised that the journalist writing that article did not use the press release as their only source. To get a better insight into whether or not journalists consulted the original research paper, wire service stories on research will also be compared with press release and newspaper article. Lewis, Williams, Franklin et al (2008) have pointed to the increasing reliance of journalists on wire copy to provide information for stories. If a newspaper article consists entirely of information contained in both press release and wire service story, this may point to a failure to read the original source of the story.

Science commentators have raised concerns that in a competitive publishing world, news journalism considerations may trump the criteria - competence, significance, originality - on which peer review is based in the decision to promote a particular paper by press releasing it (Stewart, 2003). That is to say, a less robust study may be promoted over a more robust one because of its perceived newsworthiness. There is nothing conceptually wrong with this practice (so long as one agrees with academic journal publishing as a commercial enterprise), but it does make it all the more important that any journalist reporting on the study is alive to the strength of its methodology and does not see its being press released and promoted as indicative of its competence or significance. Woloshin & Schwartz (2002) found that of 127 press releases issued by 7 high profile journals, only 23% noted study limitations, while industry funding was noted in only 22% of 23 studies receiving such funding.

In light of this finding, it would seem essential that journalists do not rely on press releases alone.

Unpublished research: conferences and clinical trials

Not all newspaper coverage of medical issues is based directly on published research in academic journals. The credibility of reporting on health issues may be undermined by pre-emptive coverage of studies which have not yet been published, and of clinical trials that have not yet reached completion. Schwartz, Woolshin & Baczek (2002) studied news stories on research abstracts presented at scientific meetings, including the 12th World AIDS conference, the meeting of the American Heart Association, and that of the Radiological Society of North America. They found that the studies presented at the meetings, despite not having been published or validated, received substantial attention in the media. They also found that many of these studies had weak designs, were small, or were based on animal or laboratory studies; 25% of the abstracts which were covered in the media remained unpublished 3 years later. Pre-emptive coverage may also impact on the public's perception of the validity of the scientific method. Between 1997 and 2002 the drug Pleconaril was widely reported as being a miracle cure for the common cold, despite still being in clinical trials (Schwitzer, 2003). The drug never got past this stage and onto the market as it failed to win FDA approval. 'This kind of story...allows the public to distrust science...it becomes easy for people to feel that scientists don't know what they're doing' (Dr. Ronald B. Turner, in Schwitzer, 2003).

## METHODS AND RESULTS

All national daily newspapers published in Ireland were searched, by hand, by the author, and articles, both news and features, that reported on health and medical research extracted for analysis. Nine sample days were chosen at random between June and September 2008. The newspapers included in the study were: the Irish Times, Irish Independent, Irish Daily Star, Irish Mirror, Irish Examiner, Irish Daily Mail, and the Irish Sun. Included were all articles which conformed to the rough template 'Research has shown', 'A new study has found', 'Scientists today said'. Not included in the study were health advice columns that contained general health advice with no indication of the study, or studies, this advice was based on; similarly, news reports on the activities of the Health Service Executive, individual testimonials as to the efficacy of some intervention (unless the article contained within its text a reference to a study), and articles which made a general claim that 'studies have shown', but did not include sufficient information for the author to reliably identify these studies were excluded.

Days were chosen at random by the simple expedient of putting numbers (9-30 for June, (9th of June being the start date of the study) 1-31 for July and August) into a hat and pulling them out at random. Two days were chosen for June (because of the start date), four for July and three for August (it had been hoped to study four days in August but time constraints precluded this, consequently the latest August date, 29th, was excluded). The dates were: 12th June, 20th June, 8th July, 9th July, 11th July, 16th July, 7th August, 13 August and 21 August. As it happened, none of the days chosen was a Sunday, had

this occurred, that number would have been discarded and another chosen. Altogether, 123 articles were identified, with an average of 13.3 stories per day (range 8 to 21). This figure of 123 naturally includes multiple reports of the same story across different newspapers, excluding these duplicates, in all 87 unique medical research stories were covered.

For the purposes of all the analyses performed from hereon, unless explicitly stated, duplicate stories were included in the calculations.

Articles were classified into five categories:

Published: articles based on research published in a peer reviewed journal;

Conference: articles based on research presented at a medical conference, if that research had not yet been published in a peer reviewed journal;

Corporate: articles based on studies conducted by companies with a product to market, if those studies had not been published in a peer reviewed journal (examples ranged from a survey carried out by Vaseline which found that Dubliners were 'most at risk' of cellulite, to a piece on a percutaneous stimulation technique for incontinence developed by a company called Uroplasty);

Government/other: articles based on government surveys (usually epidemiological) which had not been subjected to peer review; also articles based on research that could not be classified as either 'corporate' or 'clinical trial' but rather stemmed from advocacy or not for profit groups - for example a story on the use of bee venom to treat arthritis which had as its source the claims of Apitherapy advocacy groups based in the U.S.;

Clinical trial: articles based on the announcement of a clinical trial (phase I, II or III) to test a new drug or technique.

Three articles were excluded because, although they conformed to the classic 'Research has shown...' template, their source could not be determined with certainty. This left 120 articles for analysis.

<b>Published</b>	<b>Conference</b>	<b>Corporate</b>	<b>Government/ Other</b>	<b>Clinical Trial</b>
68 (57%)	21 (18%)	12 (10%)	15 (12%)	4 (3%)

*Articles by category, % of total in brackets, rounded to the nearest whole number*

Roughly, distinguishing between articles based on peer reviewed and unpublished material, there was a preference for reporting on peer reviewed research - 57% to 43%. The largest category of unpublished research, by a slight margin, contained those articles reporting on papers presented at medical conferences - 18%.

As this is the first study to compare rates of reporting of peer-reviewed vs conference reporting in the print media it is impossible to conclude if this is a high figure relative to, say, what might be found in other countries, or relative to the rate at which conference papers were reported in the past.

It should be noted, however, that there were three peaks in conference reporting - on July 8th and 9th, while the European Society for Human Reproduction and Embryology was holding its annual conference in Barcelona; and again on August 21, during the annual meeting of the American Chemical Society.



On July 8th 24% (5) of all articles were based on news from the ESHRE conference, the following day, the meeting dominated the health news, with 54% of articles reporting on papers presented there. Excluding duplicate stories, in all 7 different studies were covered on July 8th and 9th, of these, only one had been peer reviewed and published. On August 21, of the 5 different studies covered, one had been peer reviewed and published.

While overall reporting on conferences seems at first glance to be quite low, when these meetings are in train they take up a substantial, if not majority, proportion of news coverage. Schwartz et al (2002) looked at 252 news articles relating to 147 research abstracts presented at five scientific meetings held in 1995 and found that 25% of the abstracts covered by the news media were never published because they were methodologically unsound (Schwartz, Woloshin & Backzek, 2002). Of the 22 articles in this study reporting on research presented at conference, only 6 (29%) noted the source of their information as being as such. If a newspaper article failed to flag a paper as having been presented at a conference, it was necessary to cross reference with other, more informative news stories (using Google news) and/or the press release aggregators Eureka! and Alphagalileo to work out exactly which conference abstract the news story referred to. All news stories analysed in this part of the research contained just enough information to embark on some detective work which allowed for the source to be ascertained with confidence.

Whether the public would be alive to the difference between peer-reviewed, published research and the tentative nature of conference papers is questionable, it is true. It could be argued that it is the duty of the newspaper to note the fact that these studies are not yet complete, and have yet to be evaluated, the better to equip its readers with a sense of the true nature of the findings being reported. Press coverage which apes the format of reporting on published research, without even the minimal extra information that under discussion is an unpublished conference paper 'may leave the public with the false impression that the data are in fact mature, the methods valid, and the findings widely accepted' (Schwartz et al, 2002). The real world effects may see individuals experiencing undue hope or anxiety, or seeking unproved, useless or even dangerous tests and treatments.

### Accuracy

Accuracy was measured only for articles reporting on peer reviewed, published research. As neither methods nor results are available for unpublished research, it is impossible to compare their rendering in the news against their original incarnation. (Note: while this does not hold true for much government research, as in a survey of epidemiological factors impacting on health and longevity widely reported on August 13th, this research has not been subjected to peer review, and while it is undoubtedly of a high standard, it was felt to be more appropriate to restrict this analysis of accuracy to published, peer reviewed research, not least because it is not always the case that government bodies make their research methods and results available).

There were two measures of accuracy in this study: one objective and one arguably less so. The first measure looked at whether or not the hard numbers from published research (a drug reducing the incidence of an illness by 30% for example) were accurately reproduced in a newspaper article. This measure included as inaccurate not only stark inaccuracies (calling a 7 a 3, for example) but also attaching the wrong name to a number - e.g. calling 'incidence' 'risk': as in 'resulted in a 13% decrease in dementia risk' (Daily Mail, July 8th) when the study found a 13% reduction in dementia incidence.

Just over half the articles reproduced some portion of the hard numbers generated by research, whether it be the size of the sample or the results; while 64% managed to do so accurately, 36% contrived to get them wrong. (one article which had verifiably been published, in the New England Journal of Medicine, had to be excluded from further analyses because of access issues, giving a total of 67 published articles rather than 68.)

Some were simple errors - misreporting the size of the sample, for example. The Examiner of June 20th reported on a study involving '178 people'; the study reports that 178 people were recruited, of whom 170 were assessed. Inexplicable rounding, whether upwards or downwards, was also judged to be an inaccurate report of the figures (400,000 vs a true sample size of 388, 535, for example (The Sun, July 16th))

Other errors involved miscategorisation: as, for example, 'Controlling hypertension could

lead to a 13% fall in dementia risk' (Daily Mail, July 8th) where the study reported a 13% drop in incidence of dementia (a more sensational finding, which it is surprising the newspaper didn't pick up on, given the press's supposed propensity for sensation in health stories (e.g. Nelkin, 1996))

The second, more subjective measure was a broader assessment of accuracy. To be judged inaccurate, the newspaper article had to:

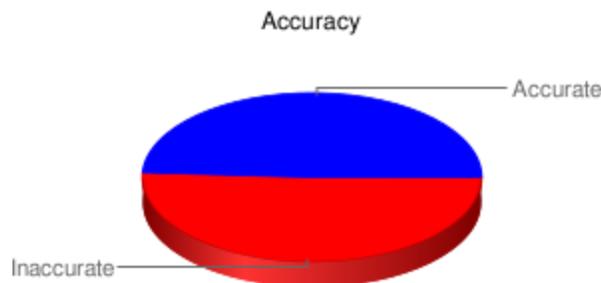
be directly contradictory of the results of a study; as, for example, in a Star piece (June 12th) that reported just smelling coffee to be as stimulating as drinking the stuff; a complete inversion of the findings of the study it was reporting on, which had found that the smell of coffee was effective in reducing the stress induced by sleep deprivation (in rats);

extrapolate from an animal study to humans if the study itself explicitly cautioned against doing so; as, for example in an Irish Independent piece (7th August) claiming that a new pill could both 'lock in' the effects of dieting, and also slow the ageing process - the study authors caution in the text of their research report: 'Whether this compound would induce similar effects in other species used as model organisms to study ageing is not known' (see Merry, Kirk & Goyns, 2008);

contain basic factual inaccuracies such as the name of the researcher or the journal in which the study was published;

contain factual inaccuracies such as the nature of an intervention - for example the Star's report (August 21) that the control group in a back pain study had received pain killers, when in fact they had been put on an exercise regime (see Little, Lewith, Webley et al, 2008). Also included were factual inaccuracies about the characteristics of the study sample, and basic inaccuracies regarding the results: the Mirror's claim (July 16th) that 'The Copenhagen based scientists found the women who did self-examine had almost twice as many negative biopsies as women who did not' when the former group had twice as many biopsies, full stop (see Kusters & Gotzschke, 2008).

In every case, the final arbiter of accuracy was the published paper - claims made by researchers and not contained in the text of the research were discounted. Put simply, those newspaper reports which diverged (whether significantly or insignificantly) from the findings of the study were judged to be inaccurate.



56% of articles were judged to not be inaccurate. While many of the inaccuracies were minor, for example the misstatement in The Star on August 21 that patients received painkillers when they did not; or sufficiently ludicrous for most readers to pick up on (The Sun's statement on August 7th that 'rats...have similar brains to humans'), these insignificant errors indicate:

a failure to properly read the source material (whether the original source material was consulted at all is a topic for the next section);  
a deep unconcern for the minutiae of the scientific method (what's an extra 11,465 subjects, after all, as in the rounding of 388,535 up to 400,000).

Note: Inaccurate report of the figures was also subsumed within this category: in other words, the 13 inaccurate reports of basic figures are included in the total of 31 articles judged to be inaccurate. In five cases out of 31 inaccurate report of figures was the only error. (See Appendix A for a breakdown of errors and inaccuracies found, along with a list of references for the studies the articles were based on).

As a point of interest, but with the caveat that some of the samples involved are very very small, breaking down inaccuracies by paper sees the Irish Independent most error prone - all four of its articles reporting on published research contained inaccuracies. It is followed by the Irish Examiner, with 8 out of 11 articles (72%) containing inaccuracies. The tabloids performed somewhat better, with the Sun registering 7 articles out of 16 (44%) inaccurate, and the Star 8 out of 15 (53%). Performing best were the Daily Mail (3 articles with inaccuracies out of 8) and the Mirror (1 article containing inaccuracies out of 5). One could speculate that the two broadsheets, in printing longer articles, lay themselves open to more error, where the tabloids, in printing shorter articles, left less space for for it.

Given the size of some of the samples, however, it is also entirely possible that differences in error rates were due to chance.

This study looked only at factual inaccuracies, and did not attempt to codify for inaccuracies in tone, lack of context, failure to assess costs and benefits of drugs or interventions, etc. It is perhaps for this reason that the tabloids performed better than the broadsheets. A recent study, which did take this approach in looking at 500 health news reports in the US media (print and broadcast) suggested that a wealth of short articles on health issues ('presumably to show the breadth of coverage') is associated with poorer reporting: 'So much is left out in these short items that it is difficult to convey any of the nuance that is so important in almost all such stories. We take the position that if a news organization cannot give sufficient space or time to a story to cover the necessary issues, then it would be better if the story were not published or broadcast at all. Incomplete stories that lack context can cause harm. People may be misled, become anxious, or make ill-informed decisions based on such stories' (Schwitzer, 2008).

## Press Releases

Previous studies into correspondence between medical press releases and news reporting have analysed only a limited number of journals - the British Medical Journal, the Lancet, Science, and Nature in de Semir, Ribas and Revuelta (1998), and the British Medical Journal and the Lancet in Entwistle (1995). Bartlett, Sterne and Egger (2002) also looked at press releases from the British Medical Journal and the Lancet, and restricted their analysis of subsequent coverage to two newspapers - the Times and the Sun (both of which are published by the same group, News International) and that only on Fridays and Saturdays.

The current study included all national Irish dailies, and, rather than taking the press release as a jumping off point to search for stories based on it (as in the studies above), worked backwards from the news article to find the press release. This involved searching Eurekalert! and Alphagalileo, American and European aggregators of medical press releases respectively. If neither returned a result, the press page of the university or institution which had carried out the research was consulted. Most of the stories for which a press release could not be traced were features based on older research; it is plausible, then, that they were at some point press released but that the search methods employed here failed to unearth them.

Category	Total number of articles	Total articles on press released research	%
Published	67	52	77%
Conference	21	13	62%
Corporate	11	9	82%
Government/other	16	15	94%
Clinical Trial	4	3	75%

In line with findings from the studies cited above that 100% (Bartlett, Sterne & Egger, 2002), 86% (Entwistle, 1995) and 84% (de Semir, Ribas and Revuelta, 1998) of newspaper health articles are based on published research which has been press released, this study found that 77% of peer reviewed studies subsequently reported on in the print media had a press release associated with them. Combining published and unpublished research, to give a figure for the whole sample, 92 out of 120 articles studied (77%) were based on material that had been press released.

Excluding the Irish Times from analysis, the figure is slightly higher - 83% of articles were based on press released research.

Note: A brief word on the Irish Times

The Irish Times is the only newspaper in Ireland to have a dedicated science correspondent - Dick Ahlstrom.

It quickly became apparent, during the course of this study, that the Irish Times has a very different policy when it comes to sourcing and reporting its medical news. Almost half of its medical news was drawn from an Irish source (47%), this compares with the Star's using an Irish source in only two stories out of 23; for the Sun, this figure is even lower, 2 stories out of 27. In the Examiner, 2 stories out of 17 were derived from an Irish source. In all cases (Sun, Star and Examiner) these stories fell under the category 'Government/other'. No news outlet, apart from the Irish Times, reported on research undertaken in an Irish university or medical research institution. Also, stories in the Irish Times were far more likely to be features - of the 15 stories taken from the paper in this study only two were news stories. Equally, only 4 of the stories covered in the Irish Times were traceable back to a press release, compared with every story in the Irish Independent having a press release as its source. Of the four stories based on press released material in the Irish Times, all contained information above and beyond that in the press release. In some of the analyses to come, therefore, the Irish Times will be excluded (this will be noted).

That 77% of the those newspaper articles reporting on published research were verifiably based on studies which had been press released is a perhaps uncontroversial finding. Numerous analyses have found an increasingly influential role for public relations professionals in the newsgathering and reporting processes of the media (Franklin, 1988, 1994, 1997; Cameron, Sallot & Curtain, 1997; Fletcher, 2006; Davis, 2007, 2008). Julia Hobsbawm has estimated (from experience rather than research) that the proportion of the 'news' attributable to PR can be anything between 50 and 80% of news content on any given day (Hobsbawm, 2006, p. 2).

Given that approximately 11,370 medical journals, comprising upwards of 1 million research articles are published each year (Diven, 2003), it would be a big ask to expect journalists to comb through even a small portion of them in search of story ideas. Hence a understandable reliance on what medical journals and universities themselves deem worthy of note.

Press releases, in the optimistic view, function to narrow the vast field of medical research, and to highlight important or newsworthy studies. Having been alerted to the existence of the study by the press release, the journalist will then proceed to research a story: reading the original research paper; talking to the researchers and/or others in the field; perhaps doing some background research in order to put the study in context.

When asked, this is just what they aver - 34 out of 42 journalists questioned by Lewis, Williams, Franklin et al. (2008) reported that they checked the content of public relations 'always' or 'more often than not'. Similarly, health correspondents interviewed by Entwistle (1995) said that they would not rely on public relations material alone, regarding access to the full text of an article as essential to write a story.

In the less optimistic view, the journalist will select the press releases (s)he considers most newsworthy, rewrite the copy, and send it out into the world, often with a by-line attached. Lewis et al (2008) found this happening in 19% of cases in an analysis of 2,207 news stories from five British newspapers (they define this 19% as 'verifiably derived mainly or wholly from PR activity'). Subdividing the news into subject categories, they

found health to be most influenced by PR - with 37% of stories derived wholly or mainly from it.

The Lewis et al study looked only at the 'top end' of the British newspaper industry - the Times, Guardian, Independent, Telegraph and Daily Mail. The current study, in looking at the full complement of the Irish print news media, offers a rather more depressing finding: where a press release existed, only 32% of all the articles analysed contained any information above and beyond that contained in that press release. That is, 68% of articles were rehashes of publicity material written by university, institutional or journal press officers.

Category	Total releases	Total containing information not traceable to press release	%
Published	52	11	21%
Conference	13	4	31%
Corporate	9	4	44%
Govt/other	15	9	60%

Disregarding clinical trials, as the sample is too small to be meaningful, newspaper articles based on published results were least likely to contain any extra information - 21%, while corporate and government press releases were disproportionately more likely to contain a variety of sources and a broader base of information (44 and 60%, respectively).

Combining the two academic categories - stories based on peer reviewed research and stories on conference presentations, 15 out of 65 (23%) stories based on press released material contained information not directly traceable to the press release.

It can be concluded with some certainty, then, that it is very rare for journalists writing health stories to consult the original research papers, or to seek any confirmation of the claims contained in press releases. Given that 35 (51%) of the articles on published research were by-lined, this raises some serious questions about Irish newspapers' propensity to occlude the truth of their journalistic practices.

It is worthwhile to look more closely at the category of government/other stories at this point, as this category contains the highest proportion of studies with supplementary information to that contained in a press release. Ten of the fifteen stories in this category were published on a single day, August 13th, and related to a study released by the

Institute of Public Health into illness and life expectancy throughout the island of Ireland (some newspapers covered different aspects of the study in discrete articles, for example The Star reported that people in Roscommon have the highest life expectancy in the state in one piece, and the information that suicide rates are higher in the South than in the North in another). 6 of these stories contained extra information, in the form of reactions from government officials and the public. That such a large proportion of stories (60%) contained information from outside the press release was certainly down to availability and access. To construct an argument, then, based on this: availability and ready access to information makes it more likely that a story will contain information beyond that contained in a press release. Research papers published in academic journals are available to journalists upon request, that is to say, they are readily available to journalists. And yet, seldom do journalists show any inclination to make use of this access. Why should this be? The answer that immediately suggests itself is that journalists writing about published medical research either are not aware of the imperative to read the original research, or, if they are aware, simply do not care to.

Perhaps they trust that public relations material issued by a medical journal or a university is reliable. If they do, this trust is unfounded. Medical journals are commercial enterprises (the scientific journal market is estimated to generate several billion pounds in revenue each year (Pira International, 2002)) and they issue press releases with the aim of promoting their brand. That they are commercial enterprises does not *quid pro quo* undermine the quality and value of the research contained in them, and it should be noted that there is a distinction between a journal's editorial and its commercial arm. Virginia Barbour, who worked for four years as an editor at the Lancet has said: 'At the Lancet, editors and managers seem to have different aims; the former to promote the free flow of information; the latter to generate revenue' (Barbour, 2004). Consequently, the finding that the input of editors or study authors in the preparation of press releases varies from none, to some, to a great deal (Woloshin & Schwartz, 2002), means that it cannot be assumed that a journal press release is neutral. Extra weight is added to this point by the finding, from the study just cited, that only 23% of press releases issued by the most high profile and well respected medical journals in the world (including the Lancet, the British Medical Journal and the Annals of Internal Medicine) have been found to include information on study limitations (i.e. possible methodological weaknesses that need to be addressed in future studies), (Woloshin & Schwartz, 2002).

The imperative for journalists to not rely on press releases alone, and the problems that can arise when they do, is illustrated in two case studies further on.

### Wire Services

In all, 41% of all health/medical stories in the Irish print media could verifiably be traced back to wire stories. This seems like a low figure, but unpicking the distinctions between

categories throws up some interesting findings.

Stories based on peer reviewed articles were based on wire stories in 49% of cases. 15 of these (22%) were unattributed verbatim reprints of wire service stories (See Appendix B for an example). 31, or 46%, were based on peer reviewed articles that had been both press released and covered by the wires, while 21, or 30% were based on press releases which hadn't been picked up by the wires. 2 stories were covered by the wires but not press released. Lewis et al (2008) suggest that often the presence of wire copy may play a role in amplifying the news value of PR material. While the current study did not systematically record the names of the journals from which stories were drawn for analysis, an interesting future research direction would be to discover if that 30% figure for press releases not run on the wires but covered in the papers comprised a substantial number of releases from big journals, like the Lancet, British Medical Journal or the Journal of the American Medical Association, the names of which, when included in a story, almost certainly bump up the newsworthiness of research. (This assumption is based on assertions in Entwistle (1995) and Bartlett, Sterne & Egger (2002) that journalists regularly scan the pages of the big journals in search of story ideas)

For articles reporting on conference abstracts, 43% (9) were based on material press released and covered by the wires; 19% (4) on material that had only been press released, and 29% (6) were covered only by the wires. Adding these figures together gives another interesting finding: 19 (91%) of the 21 newspaper articles reporting on conference abstracts can be traced back to either PR activity or the wires - in other words, newspapers were running stories about presentations given at meetings without interrogating or attempting to corroborate the claims made by outside sources. Given that the claims made at these conferences were backed up by published studies in only two instances, it would seem essential that journalists seek some insight or corroboration from another expert in the field to put the claims in context.

For corporate stories, none of the material could be traced back to the wires. However, 9 stories, or 81% of this category's total, were based solely on press releases that the wires hadn't run with. This, perhaps, is a telling insight into the penetration of corporate PR into the news media: where news desks may be wary of running with stories press released by journals or conference organisers without their newsworthiness having been proven by its coverage on the wires, lobbying by skilled corporate PROs seems to allay this wariness, allowing their products to be placed in a newspapers' pages without corroboration by other news sources.

Because the samples here are of different sizes, and the sample of corporate articles so small, no firm conclusions can be drawn, but this seeming trend would be well worth further investigation.

To return to the 11 stories on published research that contained information above and beyond that contained in the press release, and to tie them into the analysis of stories taken from the wires. Of those 11 stories, 3 had gotten their 'extra information' from the

wires. That leaves 8 stories, or 15% of all stories that could be traced back to a press release, giving any indication that the journalist involved in writing the story did anything other than take all of his/her information from press release or wire service. Breaking these 8 stories down further, we find one credited to the Times of London, (Irish Independent, 20th June, 'Scientists show that battle of the sexes is all in the mind' was a credited reprint of a story written by Mark Henderson, the Times' science editor) and two stories from the Irish Times, which, as has been noted, differs greatly from the other newspapers in its approach to medical stories. That leaves 5 stories, of which three were features covering published studies some time after they had been released. That leaves two news stories out of 50 (excluding the two press released studies covered in the Irish Times, both of which contained extra information) in this category of reporting on press released peer reviewed research, with information not taken entirely from a non-Irish newspaper, the wires or a press release.

This extra information takes the form of a quote from an Irish Cancer Society spokeswoman commenting on a study that found breast self-examination to be ineffective in detecting the early signs of breast cancer (Irish Examiner, July 16th) and one line in a Sun piece (August 13th) on an association between clumsiness in childhood and obesity in adulthood: 'Previous research found women who take fish oils during pregnancy can increase their kids' coordination'. This one line, in the Sun, is the only instance, in the entirety of this category, if the exclusion of the Irish Times is accepted, of any attempt to put research into context.

Digging deeper, and analysing the 15 seemingly 'stand-alone' stories (ie stories for which no press release could be traced, and which weren't covered by the wires), all of them were features (6 of them in the Irish Times). As has already been noted, the search methods employed in this study may have failed to unearth press releases for older research covered in features, the same holds true for coverage by the wires.

Regardless, even allowing for the fact that the features analysed were based on a journalist's own work, we are still left with only two news stories - the two mentioned above - on peer reviewed published work containing any information generated by a journalist on an Irish newspaper. It's quite likely that the Sun story came from the pen of a British journalist; leaving a phone call to the Irish Cancer Society as the only verifiable instance of an Irish journalist adding information to a report on peer reviewed research.

Performing the same analysis for stories on conference papers, of the two 'stand alone' stories, one, a story in the Examiner (June 20th) about the effect of postpartum depression on children's speech development, was a paraphrase of an article run in New Scientist magazine the month before (New Scientist, 7<sup>th</sup> May 2008); another, in the Irish Times (June 12th) on the role of physical exercise in averting dementia, was a report on a presentation given at a conference held in Dublin (giving more credence to the idea that local stories tend to be more comprehensive).

## The influence of PR

Leaving the wires aside for a moment, altogether, across all categories, there were 28 stories that could not be traced back to PR material. Sixteen of these stories were features based on old research (more than 6 months old), leaving twelve stories whose PR basis should have been easy to verify, if it existed. Five of these stories were in the Irish Times, and all of them related to local news (it is perhaps worth noting at this point that it is probably less likely that press releases from Irish institutions and companies would be posted on their websites, certainly none of the institutions mentioned in these five Irish Times stories had an online press page, as is common in the UK and the US. The possibility that these stories were generated by PR in the form of an e-mail or a mail-out to the journalist involved should not be discounted). This leaves seven news stories, out of a sample of 83 news stories - 8% - which were not generated by public relations activity.

### Bringing it all together - how many stories were generated by a journalist's own initiative?

Looking again at the 28 stories that could not be traced back to PR material, we find 8 which had come from the wires, and one, the Examiner's June 20th story on postpartum depression, which had been taken, unattributed, from another media source, giving 19 stories putatively generated through journalistic initiative. Nine of these were in the Irish Times, leaving ten original stories to be spread over the 6 other papers.

Stories generated by journalists, all newspapers	Stories generated by journalists, excluding the Irish Times
19/120=16%	10/120=8%

## PROBLEMS WITH PR: TWO CASE STUDIES

'Although AMI is relatively rare in women of child bearing age, pregnancy can increase a woman's risk of heart attack 3 to 4 fold, according to a study published in the July 15, 2008 issue of the Journal of the American College of Cardiology'

*American College of Cardiology press release, 7th July.*

Two articles on July 8th, one in the Sun, the other in the Star, contained this claim that pregnancy increases the risk of heart attack three to four fold.

Had a journalist on either paper checked, they would have found, in the first line of the study, by Arie Roth and Eli Ulkayam, the statement that 'pregnancy has been shown to increase the risk three-to-four fold' and some references - in other words, this study did not find this increase in risk. Had they bothered to read a little further, they would have

quickly realised that the study wasn't comparative (i.e. didn't compare rates of heart attack among pregnant and non-pregnant women) and so couldn't draw any conclusions as to increased risk. Two strikes against. But the plot thickens. Following the links to the references one discovers that the evidence to support the claim of a three-to-four fold increased risk of heart attack during pregnancy is a little shaky.

The 'three to four fold' statement comes from a study conducted in 2006 by James et al: *Acute myocardial infarction in pregnancy: a United States population-based study* and published in the journal *Circulation*. That study claims:

We found a higher incidence (6.2 versus 2.8 per 100 000 deliveries) and a lower case fatality rate (5.1% versus 7.3%), however, than a recent analysis that used data from a California database.<sup>10</sup> Because the California estimate of incidence was based on data from 1991 to 2000, **our estimate may reflect improved identification of cases** or may reflect a true increase in the number of cases.

(Emphasis mine.)

So, according to the study authors, since 2000 it's plausible that identification and reporting of heart attacks during delivery has improved, leading to a higher figure for its incidence. They go into a bit of detail:

Improved identification of cases may have resulted from the advent of the widespread use of troponins, which has likely resulted in the detection of small events that were previously undiagnosed. Increased detection would explain an increase in the incidence of acute myocardial infarction and a decrease in the case fatality rate. Another possible explanation for an increase in the incidence over time is the increased number of births to older women, who may have more cardiac risk factors. Between 2002 and 2003, the birth rate rose 6% for women aged 35 to 39 years and 5% for women aged 40 to 44 years. Since 1981, the birth rate for women aged 40 to 44 years has more than doubled. Another possible explanation for the higher incidence is better ascertainment of cases in the NIS database

all of which seems very plausible. Two paragraphs later (and they're not very long paragraphs either, so the two statements come pretty close together):

We do not have the incidence of acute myocardial infarction for women who were not pregnant. Petitti et al, however, published the incidence of myocardial infarction among reproductive-aged women in a large health maintenance organization. Using the age-specific rates of myocardial infarction per 100 000 women-years derived from that study and applying them to the age distribution of the women in the present study, we would have expected to find 250 myocardial infarctions as opposed to the 859 found.

**Therefore, the risk of acute myocardial infarction appears to be approximately 3 to 4 times higher in pregnancy.**

(Emphasis mine)

The full title of the Petitti et al study mentioned above is *Incidence of stroke and myocardial infarction in women of reproductive age*, and it was published in 1997 in the journal *Stroke*. A visit to the archives of *Stroke* and a look at line two of the *Subjects and Methods* section tells us that the study was conducted

May 1, 1991, through August 31, 1994, in northern California and July 15, 1991, through August 31, 1994, in southern California.

So: detection and reporting between 1991 and 2000 may have led to an underestimation of incidence in one paragraph, but two paragraphs later, the same time period is being used to estimate a three to four fold increase in heart attack risk for pregnant women. It is very likely, then, that the 859 cases of heart attack in pregnant women found in this study were down to improved detection and reporting, and the 250 cases in the general female population of 1991 may have been an underestimation.

Where did the claim for the three to four fold increase come from? To return to the American College of Cardiology press release for the study, written by Amanda Jekowsky, excerpted above:

'Although acute myocardial infarction (AMI) is rare in women of child-bearing age, pregnancy can increase a woman's risk of heart attack 3- to 4-fold, according to a study published in the July 15, 2008, issue of the *Journal of the American College of Cardiology*.'

That's three strikes: the study the Sun and the Star reported on didn't find what its press release told them it did, they didn't check; the study made a claim for a finding from a 2006 study that didn't actually find what it said it found...and so the chain of misinformation goes on.

A certain piquancy is added to this story if we bring the wire services into it. The Star states:

'A new study has warned that as the age at which women give birth rises, their risk of myocardial infarction increases. *This rare condition can increase the risk of a heart attack "three to four fold"*, the study said'.

Compare this with PA's Helen Williams on the study (Press Association Newsfile, July 7<sup>th</sup>):

'In an age when medical advances are helping older to women conceive, many women are delaying having children and potentially increasing the chances of acute myocardial infarction (AMI).

*This condition is rare in women of child-bearing age but can increase a woman's risk of heart attack `three to four fold`, the review in the Journal of the American College of Cardiology says.'*

Acute myocardial infarction is a synonym for heart attack. As well to say being female increases the risk of being a woman 100%.

The litany of errors in the reporting of this story is a perfect example of how misinformation can spread and gain credence when nobody along the line, neither the press officer, the wire journalist, nor the newspaper writer, checks their information. In this case, and in the majority of others, as we have seen, the ultimate responsibility for the accuracy and comprehensiveness of health and medical reporting of peer reviewed papers in the Irish media devolves on a public relations officer whose first duty is not to the public, as the journalist's is, but to their client.

It is true that in both the Sun and the Star this story was run as a News in Brief, and it wasn't picked up by the other papers (although The Daily Telegraph, Metro and Channel 4 news picked up on it in the UK), so it's unlikely to have caused undue concern to many mothers to be. Its low profile could indicate either that news outlets didn't see it as much of a story, or that it was cut for space because of other events (news of Madonna's involvement in basketball star Alex Rodriguez's divorce broke the same day; the jury in the Sharon Collins 'hitman' trial retired to consider its verdict, and a young Irish soldier was killed in Pamplona). There is nothing, but optimism, to suggest that this was a small story because of a general journalistic cognisance of its dubiousness.

'Not only could MHC similarity in couples lead to fertility problems but it could ultimately lead to the breakdown of relationships when women stop using the contraceptive pill, as odour perception plays a significant role in maintaining attraction to partners'

*Craig Roberts, lecturer in Evolutionary Psychology, University of Liverpool, quoted in a University of Liverpool press release, 12th August.*

**'Sniffing out Mr Right is a problem if you're on the pill' - Irish Independent, 13th August**

## 'Pill users sniff out the wrong guys' - The Star, 13th August

The study referred to in these articles was titled *MHC-correlated odour preferences in humans and the use of oral contraceptives*, and was published in the journal *Proceedings of the Royal Society, Biological Science*. Studies, in animals, have shown that genes in the major histocompatibility complex (MHC) influence individual odours and that females sometimes prefer odour of MHC-dissimilar males (the evidence, as we shall see, is equivocal). The study in question here sought to investigate whether oral contraceptive use changes these odour preferences. The study found that women's preferences changed after they went on the pill - such that they went from preferring the odours of men who were MHC dissimilar to those of men who were MHC similar. The researchers also found that single women preferred men who were MHC similar, while women in relationships preferred those who were dissimilar. They speculate as to the reasons for this, suggesting that women in relationships might seek to improve offspring quality by seeking out other pairings. The study doesn't look into this, it's just a suggestion. The study also doesn't account for why single women might prefer MHC similar men, which is fair enough, as it's beyond its remit. Nor does it account for the possibility that the kind of woman who goes on the pill may have some behavioural, genetic, other, or combination of all three characteristics, along with perhaps some environmental changes which led her to begin taking the pill, any of which may have accounted for the change in preference over time; again, fair enough, that's not what it set out to do. The study certainly doesn't, in its own right, look into issues of fertility, relationship breakdown, or the possible consequences of MHC similarity for the health of future offspring; again, all these things are beyond its remit.

However, in the introduction the authors do suggest that

Mate preference for MHC-dissimilar individuals can be adaptive as it would increase offspring MHC heterozygosity, with beneficial influences on offspring viability through increased resistance to infectious disease or avoidance of inbreeding effects

referencing two previous studies, one, Potts & Wakeland, 1993, the other, Milinski, 2006.

The latter study, reviewing the literature on the possibility that choosing an MHC dissimilar mate may be adaptive, reports that findings have been equivocal:

Many of the studies that demonstrated or implied MHC-dependent mate choice found that the choosy sex prefers partners with somewhat dissimilar MHC alleles (e.g., Bonneaud et al. 2006; Egid & Brown 1989; Eklund et al. 1991; Freeman-Gallant et al. 2003; Landry et al. 2001; Ober et al. 1997; Olsson et al. 2003; Potts et al. 1991, 1994; Richardson et al. 2005; Wedekind & Furi 1997; Wedekind et al. 1995; Yamazaki et al. 1976, 1978). MHC disassortative mating may function to increase the resistance of offspring to infectious diseases by increasing their MHC heterozygosity (heterozygote

advantage hypothesis; e.g., Apanius et al. 1997, Potts & Wakeland 1990) and/or it may operate to prevent kin-matings (inbreeding avoidance hypothesis; Brown & Eklund 1994, Potts et al. 1994), because this can have fitness benefits (Arkush et al. 2002, Meagher et al. 2000). Some correlative field studies supported the heterozygote advantage hypothesis (e.g., Carrington et al. 1999, Thursz et al. 1997) while others did not (e.g., Hill et al. 1991, Paterson et al. 1998). Also experimental studies beginning with Doherty & Zinkernagel (1975) provided ambiguous results as a recent meta-analysis showed (Penn 2002).

and concludes:

A heterozygote advantage per se has not been found by a number of studies and it is not necessarily expected either. Furthermore, as recent models have shown, a heterozygote advantage on its own fails to explain the high degree of polymorphism of the MHC (De Boer et al. 2004) in contrast to predictions of earlier models. Mate choice just for dissimilar MHC alleles would not necessarily improve the resistance of offspring nor would it help to maintain MHC polymorphism in the population.

In essence, then, studies to date (and all of the above were conducted on animals, from sparrows to frogs) have come to no firm conclusions as to the advantages of MHC-dissimilar mating. Certainly no studies have come to firm conclusions regarding fertility and the chance of miscarriage in a putative MHC-similar pairing.

There is a reason why journal articles contain references - it's so the reader may, if (s)he so wishes, check out the veracity of statements contained in that article. So, this one line in the introduction of the study under discussion, the only one, in fact, in that study to suggest that pairings of MHC similar mates may result in less than optimal offspring, is not, in fact, supported by the literature.

Which brings us to this:

‘Going for genetically similar men, detected from body odour, may increase a woman's risk of difficulties trying to conceive, miscarriage and of long intervals between pregnancies.’

*(from the Irish Independent)*

That 'detected from body odour' suggests that this study found this to be so. It didn't. While the science may support the idea that genetic similarity in partners is not good for their offspring (ie in kin mating), the science behind MHC similarity/dissimilarity does not show this to be so; as demonstrated above, the literature is equivocal, and certainly does not run to finding an association between MHC similarity and such dramatic outcomes as fertility problems and miscarriage.

Of course, had the journalist done some research (s)he would have turned all of this up. Had (s)he read just the original research paper (s)he would have realised that

extrapolating wildly was inappropriate; had (s)he read just the last three lines of the paper (s)he would have found the meat of the article (if it can be called meat, maybe tofu, better):

We do not know whether the change in preferences related to pill use is sufficiently strong to influence partner choice, but it could do so if odour plays a significant role in actual human mate choice. Some studies have suggested that women consider the olfactory domain to be an important factor in their assessment of potential partners (e.g. Havlicek et al. 2008). Although we were unable to replicate the effect, Wedekind et al.'s (1995) demonstration of an association between MHC dissimilarity and the reminiscence of current or previous partners suggests that the influence of MHC-odour cues may extend beyond the laboratory. If this is the case, our results indicate that use of the contraceptive pill could lead to choice of an otherwise less preferred partner.

That's quite a few if's. To return to Craig Roberts's claim, as stated in the press release and run unchecked by the Independent and Star:

The preferences of women who began using the contraceptive Pill shifted towards men with genetically similar odours. Not only could MHC similarity in couples lead to infertility problems but it could ultimately lead to the breakdown of relationships when women stop using the Pill, as odour perception plays a significant role in maintaining attraction

Had he included this bit of speculation in the research paper submitted to Proceedings of the Royal Society B he would have found it rapidly run through with the editor's pen. His findings do not support this conclusion; the scientific literature does not support this conclusion; there is nothing to support this conclusion but his desire to hype his own research.

No studies to date have looked at the reliability of institutional or university press releases, but given the fierce competition for grants, and the pay off from media coverage in terms of building a corporate image for a university or institution and attracting funding (Philips, Kanter et al., 1995; Yanovitzky et al., 2005; Wilson & Petticrew, 2008), it is likely that the unforgivable sensationalism of the University of Liverpool press release that set the wheels of the story above in motion is not atypical. Just as with journal press releases, as discussed above, it cannot be assumed that because a press release has an academic source it is neutral.

The irony, in an era when journalists are more and more desk bound is that checking the veracity of claims made in medical press releases is very easy. Since the source is paper, and not a person, all it takes is a reading of that paper. While it is true that many of these papers are complex and filled with jargon, it is also true that more often than not they contain a two or three line 'Conclusion' section that summarises the research findings and puts them in context (most likely to facilitate journalists). Given that this conclusion has

passed through the editorial and peer review process, it is far more reliable than a press release. And if this conclusion is boring - maybe don't run the story.

## CONCLUSIONS

On 13th September 2008 the front page of the Guardian reported the collapse of a libel case taken against the paper by Matthias Rath. Rath is a qualified doctor and the head of a nutritional supplement empire, which, it is claimed, is worth millions. Rath is also behind campaigns in the US, UK, Germany, the Netherlands, Spain, France, Russia and South Africa to persuade HIV sufferers to stop taking anti-retroviral drugs and take his nutritional supplements instead. The case was sparked by a series of articles in January and February of 2008 in which Guardian columnist Ben Goldacre condemned Rath and his practices, saying Rath 'aggressively sells his message to Aids victims in South Africa that Rath vitamin pills are better than medication'. There is a good deal of evidence to suggest that Rath's aggressive campaign in South Africa caused people there to stop taking their medication, or to never start, leading to hundreds, if not thousands of preventable deaths (Guardian, 13th September). Commenting on the collapse of the libel case in an editorial, Alan Rusbridger said 'In the west, wacky claims often seem harmless enough. But the Rath case provides a terrible illustration of the potential consequences of treating evidence with contempt'.

This study has offered evidence of widespread contempt for evidence. It is not only journalists who are at fault, it is PR officers, agency writers, and scientists themselves, at least when they're trying to promote their research findings. It is not just in the errors that contempt is displayed: their absence is often as much a matter of luck as it is anything else. Tabloid reports are shorter so there's less room for error - they showed themselves to be more accurate than longer broadsheet articles. This in itself is not evidence of their greater grasp of the importance of sound methodologies to produce sound results which can then go on to be replicated and added to an evidence base for a health intervention. Peer review was not mentioned once in 120 articles. Whether it's a Cochrane review (a meta-analysis of the most robust studies into an intervention and a very powerful tool for evaluating evidence), a flawed study into fish consumption and brain infarct (flawed because levels of fish consumption were ascertained post hoc, which is notoriously unreliable), a conference abstract whose results have yet to be analysed in full, or a piece of advertorial for a new antibiotic to fight MRSA which hasn't even been tested on animals yet (see Appendix B), everything is lumped together under the rubric 'Research has shown...' or 'Boffins today said...'. Journal names were included in only 12 articles out of 69 (8 of those in the Irish Times), that is, only twelve instances in which any inkling that what was being reported had been through a process of peer review, and wasn't theory, claim or opinion. Is it any wonder, then, that a lone voice arguing a link between MMR and autism (Andrew Wakefield) can receive massive media coverage? By this reasoning, evidence and claim are the same thing. Wakefield's claims were as 'wacky' as any made by Matthias Rath, and the decline in MMR uptake in the years after

he made them had the effect of precipitating a measles epidemic in Ireland in 2000, in which three children died (Irish Health Protection Surveillance Centre)

Here we come to the nub of the issue. The Irish print media treat medical stories as just so much cheap filler. They are cheap. They come pre-packaged, in the form of a press release, with a trustworthy name attached, be it the name of a journal or one prefixed by Dr. But contempt for evidence and an uncritical acceptance of the claims of sources that have shown themselves time and again to be as trustworthy as any other (sometimes yes, sometimes no) can come at a heavy price. In medical reporting the media can actively promote harm both by what they do as well as by what they fail to do. The evidence from this study suggests that at no point along the line are the claims made in medical press releases interrogated. At no point is the original study consulted to see what it found. Misinformation spreads and is propagated by a credulous and ignorant news media, opening the door for all sorts of nonsense to waltz through. The gatekeeper function of journalism, in this field, has been surrendered, and medical news is nothing but a cacophony of claims from vested interests (universities, research institutions, scientists, journals and drug companies), which, lacking context or evaluation, are just so much contradictory gobbledegook.

Few people say they trust the media, it is true. But when it comes to our health we are particularly and peculiarly vulnerable, and very amenable to manipulation. Changes in health behaviours, from the decline in MMR uptake (Health Protection Agency UK, 2005), to the spike in abortions performed in the four months after a pill scare in 1995 as women stopped taking contraception (Breakwell & Barnett, 2001), to the 101% increase in demand for mammography screening in Australia after Kylie was diagnosed with breast cancer in 2005 (Chapman, McLeod, Wakefield & Holding, 2005) all point to the serious real world effects of media health coverage.

'They...scrape up news which can go out to the machine, that enormous machine, that intellectual leviathan which is obliged to eat, each day, tidbits, gristle, gravel, garbage cans, charlotte russe, old rubber tyres, T-bone steaks, wet cardboard, dry leaves, apple pie, broken bottles, dog food, shells, roach powder, dry ball-point pens, grapefruit juice. All the trash, all the garbage, all the slop and a little of the wealth go out each day and night into the belly of that old goat, our newspapers...' (Mailer, 1965).

This study did not look at the whys of medical news - why there is such widespread failure to engage with the scientific method, why claim and evidence are treated as equivalent, or why newspapers so often get the facts wrong. It was hoped to bring some speculation on these issues into this concluding section, but the failure, here, to detect any kind of thinking or reasoning in the production of science news precludes it. So few stories showed any evidence of journalistic input that to search for reasons seems pointless. The only why that is relevant, then, is why newspapers are so utterly dependent on press releases and wire services. Lewis et al (2006; 2008) offer one explanation: fewer journalists are now expected to fill more space, in less time, than they ever were previously. The scope for independent thought and action has been

tremendously narrowed as profit margins are expected to remain constant as circulations decline.

They conclude: 'The advantage of all this from a proprietor's point of view is that it is possible to produce a 'quality' newspaper based largely on cheap, if not free, second-hand material. But this subsidy comes at a heavy price, one that is borne, in the end, by all of us as the quality of information in democratic society is steadily impoverished'.

Irish newspapers continue to buck the trend of steady circulation decline seen in the rest of Europe and in the US (Greenslade, 2008). If they are in fact aping the practices of their US and British counterparts by reining in on costs through recycling cheap copy it is demonstrative of an even greater disdain for the media's social and democratic function.

This study cannot claim to give a picture of the health of the Irish print media as a whole. Its field of enquiry is too narrow to extrapolate the findings to conclude, for example, that the absolute failure of anyone at an Irish newspaper to check sources or generate stories of their own found here is reflective of a broader surrender to the machinations of PR in the need to turn around cheap copy, quickly. Health reporting, perhaps, is unique in this. More research is needed to see if the depressing results of this study can be replicated across all other areas of news.

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## **APPENDIX A**

*List of articles judged to be inaccurate, with an explanation of why and references.*

Date: June 12th

Paper: The Sun

Article: **Oral sex may cause cancer**

Error(s):

States 'The number of cases (of HPV linked throat cancer) in men under 60 is rising at a rate of ten per cent per year' - the rate of increase, from the most recently available figures, between 1973 and 2004 was 0.8% per annum.

Source: Chaturvedi et al (2008) *Incidence trends for human papilloma virus related and unrelated squamous cell carcinomas*. *American Society of Clinical Oncology*, 26, 4, 612-619.

June 12th

The Sun

**Whiff me up**

'Just smelling a strong cup of caffeine-rich coffee can combat tiredness, say scientists in Japan' which directly contradicts the findings that the smell of coffee reduces stress in sleep deprived rats. A podcast, (<http://www.npr.org/templates/story/story.php?storyId=91742289>) has one of the researchers expressing bemusement that so many media outlets picked up the results of his study wrong.

Seo,H.S., Hirano, M., Shibato, J., Rakwal, R., Hwang, I.K., Masuo, Y. (2008). *Effects of Coffee Bean Aroma on the Rat Brain Stressed by Sleep Deprivation: A Selected Transcript- and 2D Gel-Based Proteome Analysis*. Journal of Agricultural Food Chemistry, 56, 4665–4673

June 12th

The Star

### **Boffins smell the coffee**

'The strong smell of coffee really does wake you up, scientists claim'. See above, but goes further: 'And they reckon the reviving aroma should be used by employers to keep staff full of beans during their shifts', which is just made up.

Seo,H.S., Hirano, M., Shibato, J., Rakwal, R., Hwang, I.K., Masuo, Y. (2008). *Effects of Coffee Bean Aroma on the Rat Brain Stressed by Sleep Deprivation: A Selected Transcript- and 2D Gel-Based Proteome Analysis*. Journal of Agricultural Food Chemistry, 56, 4665–4673

June 20th

Irish Independent

### **Men and women think differently: it's in the genes**

'Women and men may genuinely think in different ways, according to research that has found subtle genetic variations between their brains' vs 'In conclusion, our observations suggest that some sexual differences in the occipital cortex at the gene expression level may be conserved during the evolution of primates. Multiple lines of research have observed sex differences in behavioral and cognitive abilities in humans and other primates. However, whether these differences are caused by biological changes present in the brain is not yet known' - i.e. past research has observed some cognitive differences between men and women, but this study did not look at the cognitive effects of the differences in gene expression in the occipital cortex in the brain.

Reinius B, Saetre P, Leonard JA, Blekhman R, Merino-Martinez R, et al.(2008). *Evolutionarily Conserved Sexual Signature in the Primate Brain*. PLoS Genetics, 4(6)

June 20th

Irish Examiner

### **Diarrhoea vaccine patch**

Says 178 people were involved in the study - 178 were recruited but only 170 assessed.

Also says 'a new...patch may help stop diarrhoea' - the patch hasn't been released yet, pending phase III trials.

Frech S.A., Dupont, H.L., Bourgeois, A., McKenzie, R. et al (2008). *Use of a patch containing heat-labile toxin from Escherichia coli against travellers' diarrhoea: a phase II, randomised, double-blind, placebo-controlled field trial.* The Lancet, 371, 9629, 2019-2025.

June 20th

Irish Examiner

### **Painting reduces sperm**

'Men who work with solvents such as glycol ether have a 2.5 fold increased risk of having a reduced motile sperm count compared to men with low exposure' - the study reports an odds ratio for having low motile sperm count of 2.54, compared to men with no exposure. Odds ratios are not the same as relative risk. The authors of the study do not calculate the relative risk, and do not provide the size of the sample used to calculate the odds ratio above, so it's impossible to know what the relative risk increase is. It's clear, regardless, that the Examiner reported the odds ratio as a relative risk increase.

Cherry, N., Moore, H., McNamee, R., Pacey, A., Burgess, G. et al (2008). *Occupation and male infertility: glycol ethers and other exposure. Occupational and Environmental Medicine*, (April 2008, e-pub, ahead of print)

July 8th

Daily Mail

### **Controlling hypertension in the very elderly may reduce dementia risk**

Says 'controlling hypertension...could lead to a 13% fall in dementia risk', when the results found a drop of 13% in the incidence of dementia.

Peters, R. & Beckett, N. (2008). *Incident dementia and blood pressure lowering in the Hypertension in the Very Elderly Trial cognitive function assessment (HYVET-COG): a double-blind, placebo controlled trial.* Lancet Neurology, 7, 8, 683-9

July 8th

The Star

### **Pregnancy heart risk**

'Pregnant women could be up to four times more likely to have a heart attack' - the study in question was not comparative, so no conclusions viz increased risk can be drawn.

Roth, A. & Elkayam, U. (2008). *Acute myocardial infarction associated with pregnancy*. Journal of the American College of Cardiology, 52, 171-180

July 9th

Irish Independent

**Eating slowly helps you eat less**

Gives the wrong name of the journal the study is published in - it's in the Journal of the American Dietetic Association, not the American Journal of Clinical Nutrition; reports subjects ate 70 fewer calories but it was 67.

Andrade, A.M., Greene, G.W., Melanson, K.J. (2008). *Eating slowly led to decreases in energy intake within meals in healthy women*. Journal of the American Dietetic Association, 108, 7, 1186-1191

July 9th

The Star

**Boffins: chew food slowly to lose weight**

'The women...consumed 70 fewer calories' - the average decline in calorie consumption was 67.

Andrade, A.M., Greene, G.W., Melanson, K.J. (2008). *Eating slowly led to decreases in energy intake within meals in healthy women*. Journal of the American Dietetic Association, 108, 7, 1186-1191

July 11th

Irish Examiner

**Married cousins' children help autism research**

'The research has already identified large sections of the genetic code de-activated in autistic individuals' whereas the research has already identified large sections of the genetic code de-activated in autistic individuals' - it cannot be judged whether it's large or not, as it's unknown how many genes are involved. Added to this is the fact that of the 88 families studied, the researchers found missing pieces of DNA (deletions) in only five of the autistic offspring, and none of the five shared a common deletion. They conclude that their data supports the existence of many genetic changes associated with autism, which are themselves individually rare. The line above suggests that there's a single sequence of deletions or de-activations that remains to be found, which isn't the case. Also says that 'at least six genes linked to learning may be involved': three of the genes identified

are known to be switched on when nerve cells are activated - ie they're involved in learning in as much as seeing and standing are involved in learning.

Morrow E.M., Yoo S.-Y., Flavell S.W., *et al.* (2008). *Identifying autism loci and genes by tracing recent shared ancestry*. *Science*, 321, 218–223

July 11th

Irish Examiner

### **Infant's smile gives mum a natural high**

Says 'the response occurred...in areas of the brain normally associated with drug addiction' - the responses were dopaminergic, which are associated with pleasure and reward, the brain has not evolved a specific area that activates when an individual becomes addicted to some drug.

Stratheran, L., Li, J., Fonagy, P. & Montague, P. R. (2008). *What's in a smile? Maternal brain responses to facial cues*. *Pediatrics*, 122, 1, 40-51

July 11th

Irish Examiner

### **Overdoing it is risky**

Says 'doing mental or physical work when already very tired...poses a risk to cardiovascular disease', the researchers said no such thing, found rather that CV markers went down in the fatigue condition, and concluded that there's a point in fatigue where subjects are no longer motivated to continue. Say nothing at all about cardiovascular disease.

Nolte, R.N., Wright, R.A., Turner, C. & Contrada, R.J. (2008). *Reported fatigue, difficulty, and cardiovascular response to a memory challenge*. *International Journal of Psychophysiology*, 69, 1, 1-8

July 11th

Irish Examiner

### **Talking is good for old age**

'It's also good for parents to keep in contact with their own parents, particularly their mums'; the study doesn't suggest this, rather it reads 'Our findings suggest that larger social networks have a protective influence on cognitive function among elderly women. Future studies should explore which aspects of social networks are associated with dementia risk and maintenance of cognitive health.' - i.e. the researchers specifically say

they don't know which element of a social network - friend, sister, brother, mother, local shopkeeper, is associated with the maintenance of cognitive health in old age.

Crooks, V., Lubben, J., Petitti, D., Little, D. & Chiu, D. (2008). *Social network, cognitive function, and dementia incidence among elderly women*. American Journal of Public Health, 98, 7, 1221-1227.

July 16th

The Star

### **Stem cell advance**

Authors caution that human application is a long long way off, but Star reports 'these lab-produced cells could multiply in the body, helping the patient renew their own blood supply'.

Taoudi, S., Gonneau, C., Moore, K., Sheridan, J.M., Blackburn, C.C., Taylor, E. & Medvinsky, A. (2008). *Extensive hematopoietic stem cell generation in the AGM region via maturation of VE-Cadherin<sup>+</sup>CD45<sup>+</sup> pre-definitive HSCs*. Cell Stem Cell, 3, 99-108.

July 16th

Irish Examiner

### **Being 'breast aware' does not reduce deaths**

Directly contradicts advice that being 'breast aware' (noticing changes in the look, feel etc of the breast) is good, while breast self exam does not reduce the number of deaths from breast cancer (the Cochrane review finding).

Kosters JP & Gotzschke P (2008). *Regular self-examination or clinical examination for early detection of breast cancer (Review)*. Cochrane Database Syst Rev 2008; 3

July 16th

Daily Mail

### **How mum could make baby obese**

'Women who are overweight before and during pregnancy are 'passing on' the problem to their babies, a study suggests' - does note that it was a study in mice but only to reinforce suggestion that pregnant women are passing obesity on to their babies - 'While the findings come from a study of mice, the scientists believe they have implications for the

obesity epidemic sweeping the western world' (because people in the West have a different set of DNA to all other humans, not just more food??)

Waterland, R., Travisano, M., Tahiliani, K.G., Rached, M.T. & Mirza, S. (2008). *Methyl donor supplementation prevents transgenerational amplification of obesity*. International Journal of Obesity, e-pub (ahead of print) July 15.

July 16th

The Mirror

### **Breast test 'is failure'**

'The Copenhagen based scientists also found the women who did self-examine had almost twice as many negative biopsies as women who did not' - the former group had twice as many biopsies, full stop.

Kusters JP & Gotzschke P (2008). *Regular self-examination or clinical examination for early detection of breast cancer (Review)*. Cochrane Database Syst Rev 2008; 3

July 16th

The Sun

### **In breast of health**

'A study of 400,000 women in Russia and China' - sample consisted of 388,535 women.

Kusters JP & Gotzschke P (2008). *Regular self-examination or clinical examination for early detection of breast cancer (Review)*. Cochrane Database Syst Rev 2008; 3

August 7th

The Sun

### **Sardines key to cutting stroke risk**

'Eating oily fish three times a week can cut the risk of memory loss and stroke by a quarter'. Study analysed areas of brain infarct using MRI scanning. People who have had strokes are known to have such infarcts, but the ones looked at here were subclinical - i.e. in otherwise healthy people, and not associated with any known clinical effects. Study looked at fish consumption and association with brain infarct, and found no statistically significant association between the two. Add to this the fact that the study wasn't comparative (people who have had strokes and people who haven't and their rates of fish consumption), indeed didn't involve anyone who had had a stroke.

Virtanen J.K., Siscovick D.S., Longstreth W.T., et al. (2008). *Fish consumption and risk of subclinical brain abnormalities on MRI in older adults*. *Neurology*, 71, 439-446

August 7th

The Sun

### **Dogs sniff out cancer**

'The canny canines sniffed seven urine samples' - the dogs sniffed 54 samples, not seven.

Willis, C., Church, S., Guest, C. et al (2004). *Olfactory detection of human bladder cancer by dogs: proof of principle study*. *British Medical Journal*, 329, 712

August 7th

The Sun

### **Just 1 cig sets habit**

Says 'a study of rats, which have similar brains to humans' ??? (the authors do not make this assertion) also 'by changing brain chemicals with drugs, even rats with heavy nicotine habits were put off' - the only drug used in the study was nicotine.

Sherva, R., Wilhelmsen, K., Pomerleau, C.S., Chasse, S.A., Rice, J.P. (2008). *Association of a single nucleotide polymorphism in neuronal acetylcholine receptor subunit alpha 5 (CHRNA5) with smoking status and with 'pleasurable buzz' during early experimentation with smoking*. *Addiction*, 103, 9, 1544-1552.

August 7th

Irish Independent

### **Pill gives dieters new hope in war on waist**

Says a pill has 'been discovered', but it's alpha lipoic acid, which has been around for a while, also says that the pill 'locks in' the effects of dieting whereas the research actually looked at the effect of supplementing a calorie restricted diet with the acid, then taking rats (rats) off the calorie restricted diet. The study found that the extended survival effects of the calorie restricted diet (CR diets are known to extend survival in rats (e.g. Fontana & Klein, *JAMA*, 2007;297:986-994)) persisted in the supplement condition. Authors caution at the end of the study 'whether this compound would induce similar effects on survival in other species used as model organisms to study ageing is not known' but the Independent, rather than going with the results of the study, runs with the assertion of one of the authors, Malcolm Goyns - who, incidentally, had a new book (*The Anti-Ageing Protocol: How to live for up to thirty years extra*) to promote at the time

([http://sev.prnewswire.com/books/20080805/3713554en\\_iCrossing05082008-1.html](http://sev.prnewswire.com/books/20080805/3713554en_iCrossing05082008-1.html))  
that 'the pill...slows ageing' in dieters.

Merry B.J., Kirk A.J., and Goyns M.H. (2008). *Dietary lipoic acid supplementation can mimic or block the effect of dietary restriction on life span*. *Mechanisms of Ageing and Development*. 129, 341-348

August 13th

Irish Independent

### **Sniffing out Mr Right is a problem if you're on the pill**

*See case study in main body*

Roberts, S., Gosling, M., Carter, V. & Petrie, M. (2008). *MHC-correlated odour preferences in humans and the use of oral contraceptives*. *Proceedings of the Royal Society: Biological Sciences*, e-pub (ahead of print)

and

Milinski, M. (2006). *The major histocompatibility complex, sexual selection and mate choice*. *Annual Review of Ecological Systems*, 37, 159-186

August 13th

Irish Examiner

### **Drug combination offers breast cancer hope**

'A clinical trial is underway which could lead to the treatment becoming widely available' and goes on to explain that because the drugs used in the study, chemotherapy drug doxorubicin and a drug used to treat brittle bones, zoledronic acid are both 'well established and only need the terms of their use to be changed, this might not take long'. The study was conducted in mice, who were given much higher doses of the drugs than would be given in humans. Many more clinical trials will need to be conducted, including more animal studies, then phase III trials in humans, before the drugs can be used to treat breast cancer. This could take years, and there is every possibility that it will never happen.

Ottewell P.D., Mönkkönen H., Jones H., *et al.* (2008). *Antitumor effects of doxorubicin followed by zoledronic acid in a mouse model of breast cancer*. *Journal of the National Cancer Institute*, Aug 11 (e-pub, ahead of print)

August 13th

The Sun

### **Past diets affect kids**

The study says: 'The main result is that the "junk food" dietary pattern was more strongly associated with school attainment at age 3 than at later ages', ie eating junk food before the age of 3 impacted on test scores at age 3 but not later. These findings are translated in the Sun as 'New research has found that kids who perform badly at school are more likely to have been affected by what they ate in their early years than what they eat now'.

Feinstein, L., Sabates, R., Sorhaindo, A., Rogers, I., Herrick, D., Northstone, K., Emmett, P. (2008). *Dietary patterns related to attainment in school: the importance of early eating patterns*. Journal of Epidemiology and Community Health, 62, 734-739

August 13th

The Star

### **Pill users sniff out the wrong guys**

*See case study in main body*

Roberts, S., Gosling, M., Carter, V. & Petrie, M. (2008). *MHC-correlated odour preferences in humans and the use of oral contraceptives*. Proceedings of the Royal Society: Biological Sciences, e-pub (ahead of print)

and

Milinski, M. (2006). *The major histocompatibility complex, sexual selection and mate choice*. Annual Review of Ecological Systems, 37, 159-186

August 13th

The Star

### **Obesity linked to control**

'Those who were obese were 57% more likely to have suffered poor hand control aged seven' - the % increase was 5.7%. 'The study also found that obese adults and those with type-2 diabetes may already have lower levels of cognitive function in childhood "consistent with a subtle developmental impairment" - the study does not indicate this. This line comes from the introduction, and references two previous studies: Chandola T., Deary I.J., Blane D., Batty G.D (2006). Childhood IQ in relation to obesity and weight gain in adult life: the national child development (1958) study. International Journal of Obesity, 30, 1422-32 and Olsson G.M., Hulting A.L., Montgomery S.M. (2008) Cognitive function in children and subsequent type 2 diabetes mellitus. Diabetes Care, 31, 514-6.

Osika W. & Montgomery S.M. (2008). *Physical control and coordination in childhood and adult obesity: longitudinal birth cohort study*. British Medical Journal, 337, 699

August 21st

Daily Mail

### **The price of my teen acne**

'The average amount of cash an American teen is ready to part with in return for a lifetime free of acne is \$300'. First, it was \$275, second, the study didn't ask American teens, the sample consisted of those who already had acne, and who were asked how much they would pay never to have had acne.

Chen, C.L., Kuppermann, M., Caughey, A.B., Zane, L.T. (2008). *A community-based study of acne-related health preferences in adolescents*. Archives of Dermatology, 144, 8, 988-994

August 21st

The Star

### **A pain in the back with bad posture**

Says the control group received pain killers - there's no mention of pain killers in the study; the control group were put on an exercise regime by their GP.

Little P., Lewith G., Webley F., Evans M., Beattie A., Middleton K., et al. (2008). *Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain.*, 8, 337

August 21st

The Star

### **Obesity link to addiction**

'The team...said the finding pointed not only to an easy treatment for obesity, but showed it was similar to drug addiction'. The drug used in the study, vigabatrin, is a dopamine inhibitor, that is, it inhibits the normal release of dopamine that occurs when humans engage in behaviours they find pleasurable, such as eating, taking drugs or playing football. Obesity in this sense is similar to drug addiction in the same way that pushing your child on a swing is similar to drug addiction, in that both will result in the release of dopamine in the brain. That it's an 'easy' treatment for obesity is highly questionable, in that any dopamine inhibitor will not selectively inhibit dopamine release for a particular behaviour - i.e. individuals on the drug will find their pleasure in all things reduced, a fairly serious side effect. The authors do not conclude that it is an easy treatment for obesity, and while they speculate that 'binge-eating, (is) a disorder involving food

consumption in a pattern similar to the compulsive drug-seeking behavior observed in cocaine and methamphetamine dependent subjects' the study does not compare binge eaters with cocaine and methamphetamine users, and so no conclusions as to whether binge eating and drug addiction are similar can be drawn, first, and second, binge eating disorder is not the same thing as obesity - obese people may not binge eat, similarly binge eaters may not be obese.

DeMarco, A., Reema M., Milan Kahanda, D., Mullapudi, U., Pai, J., Hammel, C., Liebling, C. et al (2008). *Subchronic racemic gamma vinyl-GABA produces weight loss in Sprague Dawley and Zucker fatty rats.* Synapse, 62, 11, 870-872

## APPENDIX B

*Below are examples of the synchrony between press releases, wire stories and newspaper reports. Emphases in I and II indicate direct replication. III is included as, while the press release and wire story are not directly replicated in the newspaper piece, all of the information in the piece has been taken from these sources.*

### **Breast self-exams do not appear to reduce breast cancer deaths**

**Public release date: 15-Jul-2008**

hbns-editor@cfah.org

Center for the Advancement of Health

Contact: Lisa Esposito

It is a staple of women's health advice and visits to the OB/GYN: the monthly breast self-exam to check for lumps or other changes that might signal breast cancer. However, a review of recent studies says there is no evidence that self-exams actually reduce breast cancer deaths.

Instead, **the practice may be doing more harm than good, since it led to almost twice as many biopsies that turned up no cancer in women who performed the self-exams, compared to women who did not do the exams.**

**"At present, screening by breast self-examination or physical examination [by a trained health worker] cannot be recommended," Jan Peter Kusters, Ph.D., and Peter Gotzsche, Ph.D., of the Nordic Cochrane Centre, conclude in the review.**

However, the authors recognize that some women will want to continue with breast self-exams and **women should always "seek medical advice if they detect any change in their breasts that might be breast cancer," Kusters said.**

In the two large studies of 388,535 women in Russia and China included in the review, women who used self-breast exams had 3,406 biopsies, compared with 1,856 biopsies in the group that did not do the exams. At the same time, there was no significant difference in breast cancer deaths between the two groups.

### **Self examination 'not recommended', say cancer researchers**

Press Association Newsfile

July 16, 2008 Wednesday 2:47 AM BST

**Self-examination does little to reduce breast cancer deaths, scientists claimed today.**

Under current medical guidance from the Department of Health, **women are advised to be "breast aware" by familiarising themselves with how they feel so they notice any changes.**

**But a review of studies of more than 380,000 women concluded that there is no evidence that self-exams for lumps or other changes actually reduce breast cancer deaths.**

**The practice may even be doing more harm than good, according to the scientists, who found it led to almost twice as many biopsies that turned up no cancer in women who performed the self-exams, compared to women who did not do the exams.**

**"At present, screening by breast self-examination or physical examination (by a trained health worker) cannot be recommended," Jan Peter Kusters and Peter Gotzsche, from the Copenhagen-based Nordic Cochrane Centre, concluded.**

Although the authors **did not go as far as telling people to stop checking their breasts.**

**Dr Kusters said women should always "seek medical advice if they detect any change in their breasts that might be breast cancer".**

## **'Breast self-exam 'not recommended'**

The Star, Wednesday July 16, 2008

**Self-examination does little to reduce breast cancer deaths, scientists have said.**

**Women are currently advised to be 'breast aware' by familiarising themselves with how they feel so they notice any changes.**

**But a review of studies of more than 380,000 women** has found there was no significant difference between the breast cancer death rates of women who **self-examined for lumps** and women who didn't.

**The practice may even be doing more harm than good - the scientists say it led to almost twice as many biopsies that turned up no cancer.**

**'At present screening by breast self-examination or physical examination (by a trained health worker) cannot be recommended,' Jan Peter Kusters and Peter Gotzsche from Copenhagen's Nordic Cochrane Centre wrote.**

**But they did not go so far as telling women they should stop checking their breasts.**

**Dr. Kusters said women should always 'seek medical advice if they detect any change in their breasts that might be breast cancer'.**

## **Multi-tasking maggots in superbug showdown**

University of Swansea press release, 5th August, 2008

Scientists at Swansea University have discovered **a new type of antibiotic in maggot secretions that can tackle up to 12 different strains of MRSA, as well as E. coli and C. difficile.** The research was funded by leading charity Action Medical Research, with support from the Rosetrees Trust.



**The antibiotic, named Seraticin™, is derived from the maggot secretions of the common green bottle fly (Lucilia sericata) and scientists hope to develop it into an injection, pill or ointment.**

So far, they have purified Seraticin™ and undertaken the study of its structure and the mechanism by which **it prevents infection**. The next steps will be to complete the identification of the compound and develop a way to synthesise it. It can then be tested on human cells and eventually in clinical trials in order to determine its medical effectiveness and properties as a novel antibiotic.

MRSA infections cause suffering, amputations and death, not to mention **the estimated £1 billion cost to the NHS**. Between 2002 and 2006, 6,201 deaths in England and Wales involved MRSA and 15,683 deaths in England and Wales involved C. difficile. The rapid rise in antibiotic-resistant bacteria means that scientists urgently need to find a solution.



**Using live maggots on infected wounds is an age-old method of tackling infection** and they work with amazing speed. It's not uncommon for someone to suffer from chronic infected wounds for 18 months, despite all sorts of conventional treatment, but when maggots are applied to the same wound they can often begin to clear infection in just a few days. They have even been known to save people from having limbs amputated.

Dr Yolande Harley of Action Medical Research said: "The discovery of a potential new antibiotic is an **exciting advance. It could mean a possible novel treatment for people with chronic wounds that are infected with MRSA or other bugs.**

"By developing the pure antibiotic into a formula, such as a cream, it could reduce the contact patients need to have with live maggots to heal wounds. It could also offer a potential treatment, such as an injection or pill, for internal infections like C. difficile."



Professor Norman Ratcliffe, a principal researcher on the project at Swansea University, said: "It has been a huge team effort to get to this level and I am delighted with our progress; however there is more to do if we are to realise the maximum benefits from this discovery.

"It takes approximately 20 mugs of maggots to yield just one drop of purified Seraticin™ at present. Thus, the next stage will be to confirm its exact identity using mass spectrometry and nuclear magnetic resonance analyses in order for us to produce this chemically on a larger scale."

**Dr Alun Morgan of ZooBiotic Ltd, based in Wales, that supplied the maggots for the project, said: "Maggots are great little multi-taskers. They produce enzymes that clean wounds, they make a wound more alkaline which may slow bacterial**

**growth and finally they produce a range of antibacterial chemicals that stop the bacteria growing.”**

The Sun, August 7th, 2008

**Maggots have been used for centuries to tackle infection in wounds.**

**Now Swansea University researchers have found a new antibiotic in maggot saliva that can combat 12 strains of deadly hospital superbug MRSA.**

**The compound, found in secretions from the green bottle fly larvae, stops bacterial infection spreading.**

**It's now hoped that the antibiotic, named Seraticin, can be developed into a jab or ointment to prevent thousands of MRSA deaths, as well as combat C.diff. and E.coli and save the Health Service Executive millions of euro.**

**Dr. Yolande Harley, of Action Medical Research, which funded the research, hailed the discovery as 'an exciting advance'.**

**She added: 'It's a potentially novel treatment for people with chronic wounds that are infected with MRSA or other bugs.**

**'More effective treatments could also mean less cost to the NHS.'**

**Dr Alun Morgan of ZooBiotic Ltd, which provided maggots for the project, said: 'Maggots are great little multi-taskers. They produce enzymes that clean wounds. They can make a wound more alkaline, which can slow bacterial growth. And they produce anti-bacterial chemicals that stop bacteria growing.'**

**Severe, acute maternal stress linked to the development of schizophrenia**

**Public release date: 20-Aug-2008**

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**Pregnant women who endure the psychological stress** of being in a war zone are **more likely to give birth to a child who develops schizophrenia**. Research published today in the open access journal *BMC Psychiatry* supports a growing body of literature that attributes maternal exposure to severe stress during the early months of pregnancy to an increased susceptibility to schizophrenia in the offspring.

According to Dolores Malaspina from **New York University** School of Medicine and lead author of the study, "The stresses in question are those that would be experienced in a natural disaster such as an earthquake or hurricane, a terrorist attack, or a sudden bereavement".

Data from 88,829 people, born in Jerusalem from 1964 to 1976, were collected from the Jerusalem Perinatal Study that linked birth records to Israel's Psychiatric Registry. **The NYU authors discovered that the offspring of women who were in their second month of pregnancy during the height of the Arab-Israeli war in June of 1967 (the "Six Day War") displayed a significantly higher incidence of schizophrenia over the following 21-33 years. The study also showed that the pattern was gender-specific, affecting females more than males.**

Following the 1967 war, **females who had been in their second month of fetal life during the conflict were 4.3 times more likely to develop schizophrenia than females born at other times.** Males in their second month of fetal life were 1.2 times more likely to develop schizophrenia. "It's a very striking confirmation of something that has been suspected for quite some time", said Malaspina.

"The placenta is very sensitive to stress hormones in the mother," explains Malaspina, "these hormones were probably amplified during the time of the war."

The authors point out that the study, which assessed ongoing medical records, only supports, rather than proves, the hypothesis that the greatest vulnerability to schizophrenia is in the second month of pregnancy. Limitations to the study include a small sample population as well as the absence of information on the exact length of gestation, which makes it possible that developmental stages were underestimated.

Malaspina also points out that pregnant women in general should not be alarmed about handling daily stressors during pregnancy. "A developing fetus requires some exposure to maternal stress hormones as it normalizes their stress functioning," she says. "But women experiencing anxiety or excessive stress would do well to address it before a planned pregnancy and to have good social support systems."

### **'Stress kids' risk psychosis**

The Star, 21st August, 2008

**Women subjected to severe stress during pregnancy risk giving birth to children who develop schizophrenia, a study has suggested.**

**US boffins found that kids of Israeli women who were pregnant during the 1967 Six Day War had a much greater chance of being diagnosed with the psychotic disorder in later life.**

**Females appeared to be more affected than males. Women who were in the womb during the war were 4.3 times more likely to develop schizophrenia than those born at other times**

### Contraceptive pill influences partner choice

**Public release date: 12-Aug-2008**

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**University of Liverpool**

The contraceptive pill may disrupt women's natural ability to choose a partner genetically dissimilar to themselves, research at the University of Liverpool has found.

Disturbing a woman's instinctive attraction to genetically different men could result in difficulties when trying to conceive, an increased risk of miscarriage and long intervals between pregnancies. Passing on a lack of diverse genes to a child could also weaken their immune system.

Humans choose partners through their body odour and tend to be attracted to those with a dissimilar genetic make-up to themselves, maintaining genetic diversity. Genes in the Major Histocompatibility Complex (MHC), which helps build the proteins involved in the body's immune response, also play a prominent role in odour through interaction with skin bacteria. In this way these genes also help determine which individuals find us attractive.

The research team analysed how the contraceptive pill affects odour preferences. One hundred women were asked to indicate their preferences on six male body odour samples, drawn from 97 volunteer samples, before and after initiating contraceptive pill use.

Craig Roberts, a Lecturer in Evolutionary Psychology who carried out the work in collaboration with the University of Newcastle, said: "The results showed that the

preferences of women who began using the contraceptive pill shifted towards men with genetically similar odours.

"Not only could MHC-similarity in couples lead to fertility problems but it could ultimately lead to the breakdown of relationships when women stop using the contraceptive pill, as odour perception plays a significant role in maintaining attraction to partners."

### **Contraceptive pill can lead to 'wrong' partner, says study**

**Press Association Newsfile**

**August 13, 2008 Wednesday 2:45 AM BST**

Taking the contraceptive pill can lead a woman to choose the "wrong" partner, a new study suggests.

The Pill is thought to disrupt an instinctive mechanism that brings together people with complementary genes and immune systems.

By passing on a wide-ranging set of immune system genes, they increase their chances of having a healthy child that is not vulnerable to infection.

Couples with different genes are also less likely to experience fertility problems or miscarriages.

Women are naturally attracted to men with immune system genes different from their own because of their smell, experts believe.

The Major Histocompatibility Complex (MHC) cluster of genes which helps build proteins involved in the body's immune response also influences smell signals called pheromones.

Although pheromones may be almost unnoticeable at a conscious level, they can exert a potent effect.

A man's pheromonal odour is partly determined by his MHC. From a woman's point of view, a man with an alluring smell is also likely to have suitable immune system genes.

The new research provides evidence that the contraceptive pill can upset this process.

One hundred women were asked to ``sniff'' six male body odour samples from 97 volunteers and say which they preferred.

The test was carried out before and after the women had started taking the Pill.

Study leader Dr Craig Roberts, from the University of Liverpool, said: ``The results showed that the preferences of women who began using the contraceptive pill shifted towards men with genetically similar odours.

``Not only could MHC-similarity in couples lead to fertility problems but it could ultimately lead to the breakdown of relationships when women stop using the contraceptive pill, as odour perception plays a significant role in maintaining attraction to partners."

Being on the Pill simulates a state of pregnancy, which may reverse a woman's reaction to male odours.

Finding particular men sexually attractive is not so important once a woman is expecting a child.

### **Sniffing out Mr Right is a problem if you're on the pill**

**Jeremy Laurence**

**Irish Independent, 13th August 2008**

It was an experiment that involved sweat, love ... and could have ended in tears. When 100 women were asked to sniff 100 men's sweaty shirts in the interests of discovering the secrets of sexual attraction, they found the contraceptive pill disrupted their ability to select the ideal partner.

Body odour plays an important part in mate selection but the pill appears to interfere with a woman's sense of smell, undermining her capacity to make the best choice, researchers said.

If confirmed, the finding suggests that, by disturbing a woman's natural olfactory preferences, the contraceptive pill could be to blame for fertility problems, relationship dissatisfaction and marital breakdown. It could even lead to problems in the next generation, resulting in children with weaker immune systems.

Opposites attract -- in gender and in genes. But the study revealed that instead of going for genetically dissimilar mates, as human beings are instinctively inclined to do, women on the pill tended to select men more genetically similar to themselves.

This is evolutionary suicide because the survival of the species depends on genetic diversity. Going for genetically similar men, detected from body odour, may increase a woman's risk of difficulties trying to conceive and miscarriage.

Human diversity is nowhere more apparent than in our immune systems. Our immune response is determined by genes in the major histocompatibility complex (MHC), which also controls body odour through the immune system's interaction with skin bacteria.

Genes in the MHC thus help determine which individuals find us attractive.

For the study, women were asked to sniff six male body odour samples, obtained by shredding unwashed T-shirts which the men had worn for two nights. For each woman, three samples were selected that were genetically similar and three that were genetically dissimilar. The experiment was repeated before and after they started taking the pill.

Dr Roberts, who carried out the study in collaboration with colleagues at the University of Newcastle, said: "The preferences of women who began using the contraceptive pill shifted towards men with genetically similar odours. Not only could MHC similarity in couples lead to infertility problems but it could ultimately lead to the breakdown of relationships when women stop using the pill, as odour perception plays a significant role in maintaining attraction."