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## Cross-fertilise and watch ideas bloom

Stephen Phillips

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Interdisciplinary working is on the rise, nowhere more than in health-related fields. Stephen Phillips meets a cancer research team, while Angela Shaw (below) shows the pitfalls awaiting new courses

Olufunmilayo Olopade knew traditional single-discipline research would not be the answer for investigating the elevated incidence of early-onset breast cancer in African-American women and the particularly virulent form the disease often takes. Black women in the US are 50 per cent more likely than women of European descent to develop breast cancer by the age of 35 and more susceptible to drug-resistant strains carrying a higher mortality risk.

It's a disturbing and perplexing phenomenon that has confounded policymaking efforts, says Olopade, medicine and human genetics professor at the University of Chicago. She helped assemble a multidisciplinary team at Chicago to investigate the distinct pathology of breast cancer among women of African heritage. Women of African ancestry are also more likely to lack oestrogen receptors targeted by effective drugs, says Olopade, who won a coveted "genius" award from America's Macarthur Foundation last year.

The award was for breakthrough findings linking elevated early-onset breast cancer rates among African-Americans to breast cancer susceptibility genes similar to those found in Icelandic and Ashkenazi Jewish women.

But Olopade says genetic predisposition alone does not explain breast cancer aetiology. Chicago's Center for Interdisciplinary Health Disparities Research brings together sociologists, biopsychologists, pathologists, molecular biologists and geneticists to cover the complex matrix of variables researchers suspect are implicated in the profile of the disease among African-American women.

"We know that 70 per cent of the chance of getting mammary cancer isn't due to inherited genetic traits, so the question then becomes: what's changing mammary tissue and cell behaviour," says Martha McClintock, psychology professor and director of the Chicago's Institute for Mind and Biology, one of the centre's lead researchers. Influenced by McClintock's findings that isolated rats developed mammary tumours at higher rates than a socialised cohort, the centre is looking into social, psychological and environmental factors that may play a role in triggering genetic mutations. "The idea was to partner with people who undertake work on social context, along with geneticists and molecular biologists who study mammary cancer in humans to move beyond correlation to causal relationships," McClintock says.

Alongside McClintock's animal studies, centre director Sarah Gehlert, associate professor in the School of Social Service Administration, is enrolling 300 black women recently diagnosed with breast cancer to gather data on their psychological state, domestic situation, social network and perceptions of discrimination. Researchers measure subjects' social isolation by using variables such as homicide and vandalism rates and calls to emergency services within a quarter-mile radius of their homes.

"We're mapping areas around every woman's home, looking for features that would inhibit or encourage social interaction," Gehlert explains.

Researchers even take measurements of traffic flow outside subjects' homes as an indicator of social access. Too much traffic isn't good as it impedes social interaction, but neither is too little, suggesting residential isolation. Such field data is cross-referenced with genetic information researched by Olopade from the women's tumours after surgery. Olopade is also conducting a parallel genetic study on cancerous tissue removed from women in Nigeria. She has observed a heightened incidence of breast cancer cases in young women there, although, like many women in developing countries, this population has yet to be formally studied.

The fourth area of the centre's work, directed by associate medicine professor Suzanne Conzen, involves an investigation into how stress hormones change the way individual human cancer cells respond to chemotherapy.

Interdisciplinarity is one of the latest trends in US and UK higher education, but efforts to date have all too often been confined to researchers meeting at the start of projects, working independently, then regrouping at the end, Gehlert says. There are signs, however, that things are changing.

Last year, a Harvard University panel called for the appointment of 75 new interdisciplinary posts and the transformation of a new campus into a university-wide hub for interdisciplinary working as "science accelerates and boundaries crumble". Its report singled out the "convergence of biologists, physicists, chemists and engineers dedicated to understanding the fundamental principles that explain biological systems". In the same month, Susan Hockfield, president of the Massachusetts Institute of Technology, said: "The most important intellectual challenges of our time call for interdisciplinary approaches."

The Chicago project aims to adopt a shared approach from the beginning.

Part of the problem has been overcoming the barriers between very different disciplines. "We had to come up with this shared lexicon and ensure that no one discipline forced their way of thinking on the whole enterprise," says Gehlert. Still, she admits to bafflement on first hearing the term "aliquot" used as a unit of measurement for blood, while Olopade says she was similarly mystified by the sociological concept of "collective efficacy". For her part, McClintock says she has found herself at cross-purposes with molecular biologists for whom "stress" could connote the oxidative stress wrought by free radicals within cells - quite different from its social science meaning.

Then there are the different norms and research protocols prevailing in the respective fields taking part in the study. Human subject researchers were surprised by a presentation of one of McClintock's animal studies for which the sample size was 81, compared with the 1,000-plus they typically seek.

Lab researchers exercise greater control over variables and the phenomenon being observed was fairly pronounced, McClintock says. Animal researchers also take pains, for ethical reasons, to limit animal studies to the smallest size necessary for meaningful results, she adds, whereas human subject researchers use large numbers to control for diverse social environments, Gehlert notes. Meanwhile, the project has had to address sensitivity around population-specific research.

"When we held focus groups led by African American research assistants, the sentiment was: we don't want to be guinea pigs," Gehlert says. For this reason, interviews are conducted in women's homes to meet them on their own terms, she says. "On the question of race-based medicine, there is a lot of emotion," says Olopade. "But to study health disparities you have to recognise there may be population-specific differences that influence disease."

McClintock hopes it can "help change understanding of the causes of disease in general. What we find in the African American community may well be applicable to other humans and different diseases. If you have ten people exposed to the same germ, why do three die, four get a little sick, and the rest are not affected at all? If we put as much energy into understanding the psychological and social contributions to diseases as we do into genetics and drug-based approaches, we might come up with powerful additional tools."

## **Good intentions, great ideas and lots of red tape**

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With each faculty focused on its own area, it's a lengthy path to the fruition of the new degree

### **September 2005**

Called to a meeting by some very important people: the head of collaborative provision, the dean of the Institute for Learning, my head of department and several other deans of faculty. It seems the local authority is keen for us to develop a new degree to meet the Government's agenda set out in Every Child Matters, a multidisciplinary degree incorporating education, health, social work, social care, business and management and youth justice. They want me to lead it. Do they realise how different all these cultures are?

### **October 2005**

Have several meetings to decide on a name for the new degree and have finally settled on the BA children's interprofessional studies, which, inevitably, has become shortened to ChIPS. I am getting very good at fielding comments about "ChIPS with everything", my efforts to get sponsorship from potato growers and (my particular favourite) the dean's attempt to get the employer advisory group named as the Executive Guidance Group so that he could chair meetings for EGG and ChIPS.

### **November 2005**

First meeting of the design team for the new degree. As a first step, we need to decide how to refer to children: to the teachers they are "pupils", to the nurses they are "patients", to the youth workers they are "kids" and to the social workers they are "service users". The complexities of how to structure the degree add a few new complications. Apparently the nursing degrees all operate on a framework basis, wherein a basic structure is validated and then modules are "dropped" into the framework.

The Man From Quality adds another problem. When I suggest that we need to develop learning outcomes independently because Quality Assurance Agency benchmarks don't exist for interprofessional work, there is much sucking of teeth and tut-tutting. Apparently the university cannot chance letting us loose to develop our own benchmarks. The Man from Quality is equally disconcerted by the idea that you can run the same programme as a full-time and a part-time degree.

At the end of the meeting we have a broad outline of what the degree will look like, and I agree to trawl the QAA benchmarks for relevant subjects as well as the common core competencies for the Children's Workforce.

### **January 2006**

Our first design team meeting of the new year, and the problem is that everyone's main focus is on their own area. We look at the child protection module. The nurses have clear views of what is required in terms of detection of abuse, the social workers are absolutely determined that they are the only people who can write the module and deliver it because of their statutory powers, and the youth workers want a whole section on working with the abusers.

We can't even agree on a module title: the nurses want "Child Protection"; the social workers want "Creating Safety Nets for Children and Families"; the teachers want "Safe Systems for Children".

### **February 2006**

Lots of meetings with important people in local government, all of whom are keen to get their staff on the programme. We are having problems in the design team trying to sort out the work practice module.

Many members have professional body requirements in their own main programmes. They are used to having standards predetermined but, as we are a multidisciplinary degree, we have to combine where we can.

We are also having problems with progression routes. The social work, youth and community work and teacher training all have postgraduate routes, but nursing does not (except for qualified nurses). We have managed to put together a route that will allow students to switch after Level 5 and do a two-year top-up to children's nursing so they'll get a diploma in higher education in children's interprofessional studies and a BSc in nursing.

### **May 2006**

Submission written and out to the team to comment on and amend.

Some colleagues have now opted out, but the nurses are still hanging in there.

They have such a different view on assessment: they have no problem with exams and tests, while those from the social/educational/community/care areas are always nervous about anything that needs a "right answer" and a score out of ten.

The social workers are still nervous about the degree and about statutory responsibilities, but the teachers seem quite phlegmatic about those issues.

### **July 2006**

Have sent out hundreds of leaflets about the continuing professional development opportunities in response to local authority requests, but no takers to date. The document is now nearly ready for approval and I just have to complete the assessment matrix, the mapping of all the learning outcomes to the assessments, the assessment tariff information, the work practice handbooks, the staffing profiles and the employer endorsements.

### **September 2006**

Problems with marketing: our literature is not alphabetical, nor is it in subject families. It is organised by faculty, ditto our website.

There is no mechanism for a degree that interlinks several faculties, either for producing information or for charging against a budget.

### **November 2006**

We have gone through the approvals process and have only to meet a few conditions. The degree now has a Universities and Colleges Admissions System code and its own swish pamphlet.

We widely advertised a couple of modules available from this September as continuing professional development but, despite requests for more than 1,000 leaflets, had only two takers from the local Sure Start.

### **December 2006**

Our first inquiry from a potential student who had started a degree in London in media studies, found it wasn't for her, returned home to work in a children's centre and now knew that this was where she wants to be. I think we'll attract a few more like her.

### **2007**

We have a target of 50 full-time students for September 2007 and have gained a lot from interdisciplinary working. It was noticeable at recent cross-university staff events that the CHIPS team seemed to be in a unique position to have conversations with people from across the patch.

Angela Shaw is programme director at the Centre for Educational Studies at Hull University.

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