



# Using creative writing to promote discussion about genomics



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**Creative residencies in academic environments can provide ways of engaging with subject matter previously thought of as 'inaccessible', or not obviously interpretable through creative media. This engagement happens at different interfaces, first between the writer and the academics, and then outwardly with different audiences such as other writers, other academics, and the general public.**

During 2009 there were two writers in residence at the ESRC Genomics Policy and Research Forum at the University of Edinburgh; the science fiction writer **Ken MacLeod**, and **Pippa Goldschmidt**. Pippa has a PhD in astronomy and worked for many years as a professional astronomer before joining the civil service. She has worked in areas such as outer space policy, homelessness policy and e-commerce, both in London and in Edinburgh. She was recently awarded an MLitt in creative writing from the University of Glasgow, and has had short stories published in a variety of outlets. She is writing a novel about a female astronomer.



***Pippa's reflections on her residency at the Forum, or 'How creative writing helped me to stop worrying and learn to love the genome'***

*Literature is an effective way of opening up the scientific process to people who think they are not interested in it or who may not know much about it. It's a way of reaching new audiences. Science fiction has always reached audiences who are already scientifically literate, but the genre of literary fiction has, by and large, ignored science. I want to help correct that and I think that the writer in residency posts are part of the function of the Forum to disseminate information and trigger discussion. During my time as a writer in residence here I have developed literary activities to encourage writers and readers to come to the Forum, and think about issues they might not have been aware of.*

*My background is in physical science and one of my initial aims in this post was to learn about life sciences, and genetics. I have been exposed to fascinating new ideas such as epigenetics (I'd never even heard of this word before I started working here) and the post-Mendelian world of the complex interactions between genes and their environment. All this is fertile ground for writers.*

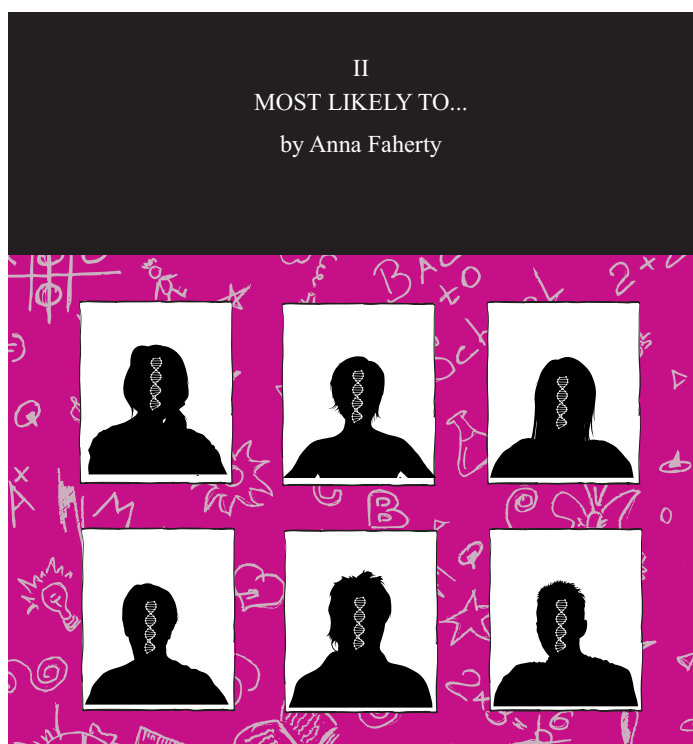
*But what has been even more interesting (and, to be honest, more accessible to me) is seeing how social scientists examine this new science. I'm interested in how the science 'leaks out' from the labs into the public and personal arena, and is interrogated and responded to. To me, it's just as valid to present and interrogate that information in a fictional environment. And exactly 50 years after C. P. Snow's famous 'Two cultures' lecture which claimed a gulf existed between 'scientific' and 'artistic' viewpoints, I think these two viewpoints have merged together in some ways. When I write fiction the process feels like conducting an imaginary 'thought experiment'. Science regularly uses thought experiments to investigate hypothetical scenarios which (usually) cannot actually be carried out in 'real life'; Schrödinger's cat is just one very famous example. So where are the differences between asking questions in fiction and asking questions in science?*

During her time at the Forum, Pippa initiated a programme of activities, to engage a variety of audiences:

### Engaging other fiction writers

Pippa organised a short story competition, asking fiction writers to respond to the impact of genetics on society and individuals. The judges were the crime writer Lin Anderson, Dr Elizabeth Patton (MRC Human Genetics Unit, and University of Edinburgh) Professor Simon van Heyningen (Biochemist and Vice Principal for teaching and learning, University of Edinburgh) and Dr Joan Haran (Cesagen, Cardiff University). Over a hundred stories, based on a wide variety of topics, were received from writers around the world.

A short story is a rigorous and challenging discipline; it is required to set up a premise and fulfil it in a limited space. But it cannot be polemic, and neither can it ignore the lyrical qualities of language. The judges felt that some stories failed to work because they had too much science, and not enough story. Others were too insistent on a single interpretation of the science. The best stories sidled up to the science sideways, implicitly following Emily Dickinson's advice; 'tell the truth, but tell it slant.'



Almost all the stories submitted concentrated on human genetics and very few looked at animal, plant or other types of genetics. This might have been because of the emphasis given to human genetics in the original brief for the competition, or it might be because most fiction is human-sized, and we do not always see the drama in the genetics of the environment.

The judges commented that: "Most of the stories concentrated on the perceived negative impact of the science. Perhaps writers just concentrate on the negative aspects of anything because that is where the drama is more likely to be found, or perhaps it's indicative of a general fear of the impact of genetics."

The winning stories are published on the Forum's website, at <http://www.genomicsnetwork.ac.uk/forum/news/title,9627,en.html> and also in a collection of pamphlets which is on sale at the Forum.

#### **Excerpt from brief for short story competition:**

*Information about the genetic makeup of people, animals and plants impacts on every aspect of our lives. But do we understand this impact? And what should we make of it?*

*How is our understanding of who we are affected by the knowledge that we share so much of our genetic makeup with fruit flies, mice and even pumpkins?*

*Are we just the sum total of our genes? What role does our environment have? Our families impact on our development, but is that because we share genes, or because we share environment, or both?*

*The challenge*

*Write a short story influenced by the issues alluded to above.*

### Engaging academics and clinicians

As part of encouraging people to think about how literature can be used to investigate the external world, Pippa ran workshops for social scientists and medical practitioners, usually as part of larger meetings or conferences, for example the Gengage conference held in June 2009. In these workshops, participants discussed how science is written about, both in fiction and also in traditional science narratives (such as academic papers). They also discussed how science is represented in fiction and poetry, before doing some creative writing of their own.

Pippa also gave a paper at the 'Science and the Public' conference held in June 2009, at the University of Brighton. This paper looked at how literature is able to examine aspects of science that are traditionally excluded from formal scientific outputs, such as the role of the 'narrator' in scientific narratives. Usually the narrator is invisible in such narratives, despite his or her influence on the work and its outcomes. But literature is well placed to investigate the role of all sorts of narrators, including those who claim they have no role. The paper also examines how both processes of doing science and writing literature can be imagined as 'thought experiments'.

The paper can be found online at <http://www.pippagoldschmidt.com>, and a shorter paper on the role of thought experiments in science and literature will shortly be published on <http://www.lablit.com>

## Engaging oneself

Pippa's own work has been influenced by her experience at the Forum, and not just from the new-found knowledge on life sciences, but also from the realisation of the importance of the social aspect of scientists' work; and the impact that scientists' environment and culture can have on what they do. She has used information on genetics in short stories published on the web-based Human Genre Project ([www.humangenreproject.com](http://www.humangenreproject.com)), initiated by Ken MacLeod. She has also been looking at what the study of genetics says about human identity, and how people are relying on it as an (apparently) objective way of carving out their identity.

### **Pippa on literature and identity**

*I've always been fascinated by the interplay between personal identity and nationality, partly because of my own family history. I've been writing a series of short stories examining how refugees change and adapt the way they live in their adopted country. As a Jew, I've always wondered how much of the Jewish 'identity' (of course there is no single identity) is genetic, and how much is learned from the environment.*

*In fact genetics and environment are linked. This sort of talk used to be heretical in biology but during my time at the Forum I've learned about epigenetics, which tells us that environment can affect whether or not genes get 'turned on', and that the traces of environmental impact or trauma (such as famine) can be felt on future generations.*

*And in the absence of easy national identities for us all to latch onto, are we turning towards shared or individual genes to fulfil the role of some sort of shared identity or inheritance?*

*I'd argue that literature is one arena where we can invent ourselves and share those inventions with others.*

*Here's one of my stories, which is published on <http://www.humangenreproject.com>. It was influenced by the fact that people's perception of bitter tastes is influenced by certain genes, as well as my ongoing explorations of nationality and Jewish identity.*

### **One of the ten plagues will fall on this house**

*It's Passover and tonight is the Seder. You're the youngest, so it's your duty to ask the questions. You've practised them all week.*

*"Why is this night different from all other nights?" Your mother turns away from you to plunge her hands into the kitchen sink. You admire the way she can wash the dishes without looking at them.*

*"Why is this night different from all other nights?" The cat tucks his head under his paws.*

*"Why is this night different from all other nights?" Your sister looks in the mirror as she attempts to put on mascara.*

*"Why is this night different from all other nights?" Your father hides his face in his newspaper.*

*As your mother grates the horseradish for the seder plate, the hot sharp smell spreads through the house and makes tears run down your face.*

*You manage to ask all the questions and your father answers them. Your grandmother tells your sister off for wearing lipstick. One of your cousins breaks a crystal glass but your mother stays calm.*

*You're allowed to open the front door for the angel, but then you have to go to bed.*

*The next morning the front door is still open, and your mother isn't at breakfast. Your father burns the toast. When you leave for school, the cat runs outside and is never seen again.*

*At breaktime you go outside into the playground and stare into the sky. You wait for it to rain frogs or locusts, but nothing happens.*

*Your mother isn't at home after school. Your father cooks spaghetti that night but you can't eat it.*

*The next night you hear him whispering into the phone. "Please," he says, "please."*

*You hear him doing this every night, but he never tells you why.*

*You get a goldfish. You start to eat again. Your sister goes out with a boy from down the road.*

*The next year you go to your grandmother's for the Seder. You're not the youngest there, you don't have to ask any questions. You don't eat the horseradish. You remember how bitter it was, last year.*

## Engaging the public

These issues were discussed at an event titled 'Genetics and Identity in the Year of Homecoming' sponsored by the Genomics Forum at the Edinburgh International Book Festival in August 2009. The invited speakers were the writers Suhayl Saadi and Gwyneth Lewis, and the genealogist Bruce Durie. The event was chaired by the other writer in residence at the Genomics Forum; Ken MacLeod. The speakers and the audience debated how much of our identities we construct (consciously and unconsciously) from different ingredients such as family history, place, genes, and nationality. This event is part of ongoing sponsorship of the Book Festival by the Forum, which sponsored three events at the Festival in 2009.

See <http://www.genomicsnetwork.ac.uk/forum/events/edinburghinternationalbookfestival/title,11713,en.html> for more information about this event.

*This briefing was written by Pippa Goldschmidt and edited by Christine Knight, Policy Research Fellow, ESRC Genomics Policy and Research Forum.*

The **Genomics Policy and Research Forum** is a novel ESRC-funded initiative dedicated to the development of links between social scientists and scientists working in the contemporary life sciences, and the connection of research in this area to policymakers, business, the media and civil society. The Genomics Forum is based at the University of Edinburgh and is part of the **ESRC Genomics Network (EGN)**, a major ESRC investment spanning five of the UK's leading universities examining the development and use of the science and technologies of genomics. The EGN includes three ESRC-funded Genomics Centres – **Cesagen**, **Egenis** and **Innogen** – as well as the Genomics Forum.

For further information visit [www.genomicsnetwork.ac.uk/forum](http://www.genomicsnetwork.ac.uk/forum), or contact:

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