

# TURNING POINT

## Marta Zlatic

*Marta Zlatic, a neurobiologist at the Howard Hughes Medical Institute's Janelia Farm research campus in Ashburn, Virginia, has published an 'atlas' of the larval fruit-fly brain that pinpoints the neurons responsible for recorded behaviours. It is a major step towards realizing her dream of understanding how brains mediate behaviour.*

### What were your early interests?

Growing up in Croatia, I had fantastic Latin and Greek teachers. I loved grammar and the rules of language, learned eight languages and enjoyed reading literature in its language of origin. But I was also interested in biology, stemming largely from wanting to understand the neural basis of language and behaviour. I studied linguistics and Russian at the University of Zagreb in Croatia before starting at the University of Cambridge, UK, where I was able to explore my interests in neuroscience, languages and theatre.

### What were your pivotal career moments?

There were a couple. One was attending lectures on the assembly of neural circuits in fruit-fly embryos by Cambridge neuroscientist Michael Bate, who inspired me to study the first steps of that process. I ended up doing both my PhD and postdoc at Cambridge. Another was receiving a prestigious postdoctoral fellowship from Cambridge's Trinity College, which allowed me to freely pursue research in neural-circuit assembly at both Cambridge and abroad. I spent a year at Columbia University in New York and a year at Janelia Farm, where I discovered that colleagues were developing amazing genetic tools, including transgenic fruit flies in which you could manipulate neuron types, which is necessary to create a functional neuroanatomy map.

### How did working at Janelia affect your career plans?

My husband, Albert Cardona, and I met as visiting postdocs at Janelia. I was working out how to piece together a neural-behaviour map, and he was determining the viability of a connectome, a map of neural activity in the larval fruit-fly brain. He got a job in Zurich, and I was hired as a group leader at Janelia. We came up with long-distance strategies such as working as visiting scientists at each other's institutes until Albert was hired as a group leader in neurobiology at Janelia in 2011. Our aim is to put the neural behavioural map and the connectome together



— an important step towards linking behaviour to the underlying brain circuitry.

### Why start with fruit-fly larvae?

Fruit-fly larvae have only about 10,000 neurons, compared with the adult's 100,000, so it is a manageable system. Plus, we could experimentally control most neuron types of the larval neurosystem using existing genetic tools.

### How did you put the atlas together?

Janelia was one of the few places in the world where this research could have been developed. We had access not only to transgenic fruit flies, but also to images of neuronal expression patterns in those larval brains. In collaboration with Janelia colleagues, we developed a system that could generate movies of larval behaviour in 40,000 animals in response to stimulation of specific neurons. We also worked with Carey Priebe at Johns Hopkins University in Baltimore, Maryland, who created a program that could distinguish between 29 types of behaviour and map each to specific neurons. Altogether, creating the atlas took three years of collecting data, making sense of them and verifying them.

### How will the atlas affect your career?

This is the foundation for the work I want to continue with Albert. We need to combine three maps: of neuron-behaviour, neuron connectivity and neuron activity. Together, they will lay the groundwork for a brain-wide understanding of behaviour. If we can one day understand how complex sequences of actions are generated and learned in model organisms, maybe we could look for similar principles in humans. ■

INTERVIEW BY VIRGINIA GEWIN

## WORK-LIFE BALANCE

### Learn from leisure

All work and no play could make for a mediocre researcher, according to a study (K. J. Eschleman *et al.* *J. Occup. Organ. Psychol.* <http://doi.org/sfg; 2014>). Workers who also engage in creative activities such as painting or playing music perform more effectively in their job, says lead author Kevin Eschleman, a psychologist at San Francisco State University in California. Creative activities outside work also help employees to bounce back from stress and to learn new skills, he says. Eschleman and his co-authors surveyed 433 US workers in various occupations, including 92 active-duty US Air Force captains. Eschleman advises scientists to take up leisure activities to help their conscious mind to detach from workplace pressures and their subconscious to find different approaches to their research.

## UNIONS

### Adjunct action

A concerted effort by an international union to link up adjunct US faculty members is succeeding in its city-by-city approach. The Service Employees International Union has enlisted about 70% of adjunct faculty members in the Washington DC area. Malini Cadambi, the union's higher-education campaign director, says that 80% sign-up is possible. The union last year launched similar strategies in Washington state and Massachusetts, and is expanding to seven more US regions. A wide membership base provides adjunct faculty members with more bargaining power in their push to raise pay, make evaluations fairer and boost academic freedom, says Cadambi.

## REMUNERATION

### Narrowing pay gaps

Gaps between vice-chancellors' and professors' pay rises reported in the *Times Higher Education* 2012–13 salary survey were highlighted as UK faculty members negotiated contracts for the upcoming academic year. The survey found that professors' salaries rose by an average of just 1%, to £75,472 (US\$126,782), whereas vice-chancellors' pay (including some benefits) jumped by 5.5% to £232,120. This year, professors have been offered a 2% rise, says Jenny Sherrard, a spokeswoman for the University and College Union in London. "It's not acceptable for those at the top to be receiving higher percentage pay rises than are on offer to the rest," she says.