© 2024. Published by The Company of Biologists Ltd | Development (2024) 151, dev202969. doi:10.1242/dev.202969

INTERVIEW

# The people behind the papers – Margret Bülow and Pilar Carrera

Bez is a Class B scavenger receptor in *Drosophila* that is yet to be characterised. In a new study, Margret Bülow and colleagues uncover a role for Bez in mobilising lipids from *Drosophila* adipocytes into the ovary for oocyte maturation. To find out more about the people behind the paper, we caught up with first author, Pilar Carrera, and corresponding author, Margret Bülow, Group Leader at the University of Bonn.

**Margret, can you give us your scientific biography and the questions your lab is trying to answer?**

**MB:** I did my PhD in the lab of Ruedi Aebersold at the Institute for Molecular Systems Biology at ETH Zürich. I then moved to the University of Bonn for a postdoc position in Michael Hoch's lab, which is also where I met Pilar. I then became a third-party-funded Group Leader at the Life and Medical Sciences Institute of the University of Bonn. My lab is interested in membrane contact sites and how they define the function of neurons and nutrient signalling in an organism.

**Pilar, how did you come to work with Margret and what drives your research today?**

**PC:** I am a structural biologist by training, but after my PhD I decided to switch fields and work in the field of developmental biology with fruit flies. In Michael Hoch's laboratory, I became interested in immunity and metabolism, and this is how I started to work on scavenger receptors. During this time, we had exciting discussions with Margret on a variety of topics, which finally brought us to collaborate on Bez protein. Currently, my research interest has shifted more towards neurosciences, particularly characterising molecular networks interconnecting neurons.

**What is the background of the field that inspired your work?**

**MB:** I work a lot on peroxisomes and thus became interested in lipid biochemistry. Pilar's project on lipid scavenger receptors caught my interest, and we teamed up to decipher the mechanisms of lipid allocation in *Drosophila*.

**PC:** The published work about vertebrate scavenger receptors, such as CD36 and the SR-BI family, challenged us to screen for scavenger fly receptors in *Drosophila* that have a conserved function in lipid transport. The outstanding work of Suzanne Eaton's lab in the field of fly lipoproteins and lipid transport was essential to inspire and develop our project.

**Can you give us the key results of the paper in a paragraph?**

**MB:** Pilar identified a receptor that is responsible for remotely supplying ovaries with lipids from adipocytes. She named the receptor 'Bez' and established its interaction with lipoprotein particles. I then found that Bez is required for lipid export, and used alkyne-labelled fatty acids and click chemistry to show that Bez transfers lipids from adipocytes to lipoprotein particles, which transport them to the ovaries.

Pilar Carrera (left) and Margret Bülow (right)

**Pilar, when doing the research, did you have any particular result or eureka moment that has stuck with you?**

**PC:** An amazing result was when we looked at the lipid droplets in flip-out clones and found that Bez knockdown adipocytes had bigger lipid droplets than the surrounding wild-type adipocytes. To observe differences in lipid droplet size in cells that obviously were in the same developmental stage and that had been under identical nutritional conditions gave us a strong hint about the function of Bez in lipid transport.

**And what about the flipside: any moments of frustration or despair?**

**PC:** Frustration can occur at any time when you do basic research, mostly because the majority of experiments tend to fail. I think that the secret lies in building up resilience. I try to learn as much as possible from the background literature and to discuss every aspect of my research with my dear colleagues. Most importantly, as a researcher, you have to keep an open mind and avoid a bias to pre-existing notions.

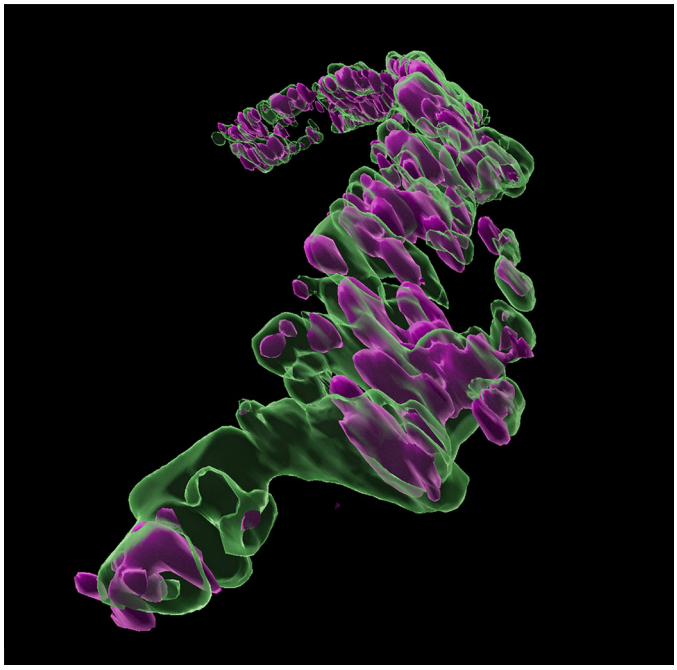
**Most importantly, as a researcher, you have to keep an open mind and avoid a bias to pre-existing notions**

**Why did you choose to submit this paper to Development?**

**MB:** Development is a journal with a very good reputation. I was favourably impressed by how the editor handled the paper and by the fair and constructive reviews.

Life and Medical Sciences (LIMES), University of Bonn, Carl-Troll-Straße 31, 53115, Bonn, Germany.
E-mail: mbuelow@uni-bonn.de

Development (2024) 151, dev202969. doi:10.1242/dev.202969



**The *Drosophila* lipid scavenger receptor Bez (magenta) of the CD36 family interacts with Lipophorin (green) at the plasma membrane of adipocytes to export lipids for ovary maturation.** Imaris 3D reconstruction of an Airyscan confocal image. Image credit: Margret Bülow and Marie König.

**PC:** Ever since I was a young postdoc with Herbert Jaeckle, I had the aspiration to publish my research in Development, at the time one of the best – if not even the best – journal in the field, and I still feel that way today.

**Pilar, what is next for you after this paper?**

**PC:** I have joined the neuroscience laboratory of Dietmar Schmucker, where I study the molecular networks required for establishing proper axonal arborizations and synapses in neurons of *Drosophila*. How translation, especially axonal protein synthesis, regulates neuronal wiring is at the core of my ongoing research.

**Margret, where will this story take your lab next?**

**MB:** I am moving my lab to the University Hospital of Düsseldorf this summer: this paper is the ideal basis from which to launch new collaborations on adipose tissue organoids, one of the research foci of my new department.

**Finally, let's move outside the lab – what do you like to do in your spare time?**

**PC:** I love books – and not only scientific textbooks; I spend most of my free time reading novels, particularly from Spanish and German authors. I travel often to Spain to visit my parents and to the south of Germany to see my children. On weekends, I take very long walks with my husband along the Rhine River.

**MB:** I share Pilar's passion for novels and we often exchange books that we like. Apart from that, I find it very relaxing to reflect about my research while doing sports, to be outside and, most of all, to spend time with my husband and children.

**Reference**

**Carrera, P., Odenthal, J., Risse, K. S., Jung, Y., Kuerschner, L. and Bülow, M. H.** (2024). The CD36 scavenger receptor Bez regulates lipid redistribution from fat body to ovaries in *Drosophila*. *Development* **151**, dev202551. doi:10.1242/dev.202551