

Special Issue: Specificity of plant–enemy interactions**Interview with Martin Heil**

Martin Heil is professor and senior researcher at the CINVESTAV-Irapuato in México, leading the plant ecology laboratory. His group studies co-adaptations in mutualisms and induced defences of plants against pathogens and herbivores.

What influenced your path into plant biology?

My way into biology was predictable ever since my early years in kindergarden, in Hanau, Germany, when I already considered plants and animals way more interesting than cars and ball games. Therefore, I studied Biology, Geology and Philosophy at Würzburg University.

So why then did it become plant biology?

Well, I always felt more comfortable in a botanical garden than in a zoo, and plants do not run away when a curious scientist is approaching. However, I always saw my interest at the interface between plants, microorganisms and animals and therefore focused in my PhD field work, in Malaysia, on a protective ant–plant mutualism. I continued to work on this topic during my postdoc at CEFEC/CNRS in Montpellier, France. I then joined Wilhelm Boland's Department of Bioorganic Chemistry at the Max-Planck-Institute for Chemical Ecology in Jena, Germany as junior group leader. At the age of 36, I accepted a full professorship at University of Duisburg-Essen, where it took me less than three years to find out that for me research is more interesting than administrative duties. For this reason, in 2007, I moved to CINVESTAV-Irapuato in México, where I am currently leading the plant ecology laboratory.

What was the driving force for you to move to Mexico for your research?

The degree of freedom that I have in my work and my private life and the very low load of administrative duties. Moreover, the level of appreciation that I receive here for my research is by orders of magnitude higher than before, the authorities of the institute give me the impression that they do whatever they can to support my research, and as long as I maintain my productivity I can practically do whatever I want. Fund raising is comparably easy, because Mexico invests relatively more in science than for example the USA, at least when we divide national funds for science by the number of scientists that are competing for these funds. Another important aspect is that the Mexican system as a whole appreciates your scientific productivity, in terms of publications, citations and graduated students, which not only strongly influences the personal salary, but also the chance to get projects accepted.

How did you decide on your current research topics?

I have no major strategy at all, but rather follow a stochastic, phenomena-based approach. My decisions are

mainly guided by curiosity, that is, when I see an interesting phenomenon in the field or read about a strange observation in the literature, it might easily occur that I start a new project in order to find out what is going on.

Has your work been affected by the genomics revolution?

Recently, yes, because the new high-throughput sequencing approaches allow the investigation of ecologically relevant phenomena in non-model species under field conditions. For example, our ant–Acacias are ecologically extremely interesting plants that possess multiple adaptations to maintain the ant–plant mutualism. However, because they are taxonomically very distant from any model plant, classical genetic tools were not suitable to approach these phenomena at the genetic level. With the recently developed high-throughput sequencing techniques, we are now able to search for the genetic control mechanisms that underlie a functioning ant–plant mutualism.

What would you be if you were not a biologist?

My way into biology seemed predestined; at least, I cannot remember ever actively considering any alternatives. However, if I had not pursued an academic career, being a ballet dancer or opera singer (tenor) would have been attractive possibilities. In fact, I personally feel more like an artist than a classical scientist, a phenomenon that perhaps also underlies my “emotion-guided” approach in the selection of research projects.

What is your favorite book?

Difficult to mention only one. If four are allowed, the selection would be: “Der Zauberberg” by Thomas Mann, “La tia Julia y el escribidor” de Mario Vargas Llosa, “100 años de soledad” de Gabriel García Marquez and, well, to be honest... “Die Stadt der träumenden Bücher” by Walter Moers.

Do you have a scientific hero?

Immanuel Kant and Werner Heisenberg, because I think that both had the most dramatic impact on our understanding of what science can achieve and of its limitations, and of the way in which we perceive our position in reality.

Are scientific controversies helpful?

Of course they are, as long as they are maintained free of personal attacks and avoid the abuse of political positions (including the position as a referee) to suppress the unwanted ideas. If we believe Thomas Kuhn, revolutions are the mechanism by which science proceeds.