

# PharmaSea

**Professor Marcel Jaspars, University of Aberdeen**

Professor Marcel Jaspars built an international collaboration, using European Union Framework Programme 7 (EU FP7) funding to find treatments for conditions such as Alzheimer's disease and epilepsy. Their goal is to find active compounds to fight such central nervous system diseases – as well as looking for new antibiotics – from marine bacteria and fungi, typically in deep sea and cold environments such as the Arctic, Antarctic and deep water trenches.

**Professor Marcel Jaspars**

Institution: **University of Aberdeen**

Funding: **FP7**



Searching Arctic waters off Norway

Professor Marcel Jaspars' team at Aberdeen University worked with both industry and academic partners across European institutions, on a project funded by the final round of the EU's FP7 programme, finishing in March 2017. Marcel explains: **"What we do mainly is discovery of natural products from marine sources – invertebrates, deep-sea bacteria and fungi.** We have done this for a very long time so it was obvious that we should apply for this particular call and put together a big team. Really, this was right in the middle of our skill-set.

"The University of Aberdeen was the scientific lead on the project – the administrative lead was KU Leuven [in Belgium] because of their standing and knowledge of dealing with EU grants. This was great for me as it allowed us to focus on the science without getting caught up in the administrative side of things".

## **A pipeline of international partnerships**

The project included researchers from 24 partner institutions, from 14 countries, including Italy, Spain, Belgium, Denmark, Norway and Germany, which are part of the EU funding programmes, as well as wider international partner countries such as China and South Africa.

Marcel believes the international make-up of the collaboration brought together complementary expertise and skills. He explains: "We had everything from the beginning to the end of a drug discovery project so we decided to treat things as a pipeline – we had groups with expertise in isolating bacteria, which was done in Ireland, Norway and also in Italy. Then we had the building of the extract libraries, mainly done in Spain and Norway, but also in China and some work in Costa Rica.

"Next was the biological screening of the libraries: this was done in Leuven, Spain and Norway as well as at partner companies. We had scale-up and downstream testing which was done in part at a company in Austria and in a veterinary school in Spain. Finally we had a big partnership on governance and policy of the oceans, which resulted in us getting involved on a UN [United Nations] process that's still going on.

"In terms of skills brought by the international nature of the project group, much was complementary with specialist areas of science, policy, administration and publicity, so it ended up working really well – it was a very productive consortium, and very positive in terms of outcomes."

### A patent success

So far, the PharmaSea project has filed two patents, with a third one on the way. The first is an anti-Alzheimer's series of compounds, which has already reached the advanced stage of having derivatives made and tested. The second patent, which covers a series of compounds that have activity against epilepsy, has been submitted and describes a new drug prototype, and there are strong hopes for its success.

Marcel explains that the collaboration has not been without its challenges for some partners: "Unfortunately, one of the partner companies failed – which was disappointing, though not uncommon for SMEs [small or medium enterprises]. The company that we got in to replace them – SeaLife Pharma – was subsequently sold, so that was a success in the fact that they were part of a big European consortium and their association to a big EU-funded project like this would have made them a more attractive proposition.

### Positive international impacts

Marcel explains that the biggest success his team didn't foresee was with UN policy. He says: "60% of oceans are not covered by international laws to protect marine biodiversity. Our work showed what the commercial value might be of this deep sea biodiversity. We started with input at an event at the UN in 2014 and then in 2015 the process went into a stage of formal negotiations, and we were invited to all negotiations by the International Union for Conservation of Nature, who were also one of our partners.

"Between us we have participated in over 30 events to present the scientific aspects of such an agreement. We combined a number of ideas into a policy paper that has been received very well and subsequently used as a basis of a couple of meetings where the ideas were discussed. All of these things are long-term but they came from the PharmaSea project itself and the PharmaSea brand turned out to be a very powerful thing."

"The FP7 funding was essential. From our background and the work we had previously done, we were in a very good position to apply for the grant when the opportunity arose. Many European agencies like the ESF [European Social Fund] are very helpful in getting people together and saying this is the kind of thing you should be thinking about doing, so I like to be involved in EU level reports and things like that. Since the Brexit vote I've been asked to be part of more EU science advisory boards and committees than ever before and, while they are afraid that we might lose the ability to have UK partners in H2020 [Horizon 2020] and its successor, they still want the UK to provide expertise on advisory boards.

"For me it has been hugely positive to have friends all around Europe and to have them include me in their projects. It has given me the reputation of a person who can run a very large project well. I learnt to deal with some very difficult situations throughout the project so it was a great learning curve for me personally. Scientifically, to be part of patents that could prove useful is also fantastic."

Marcel Jaspars, The University of Aberdeen      Cold water Ascidiaceae

