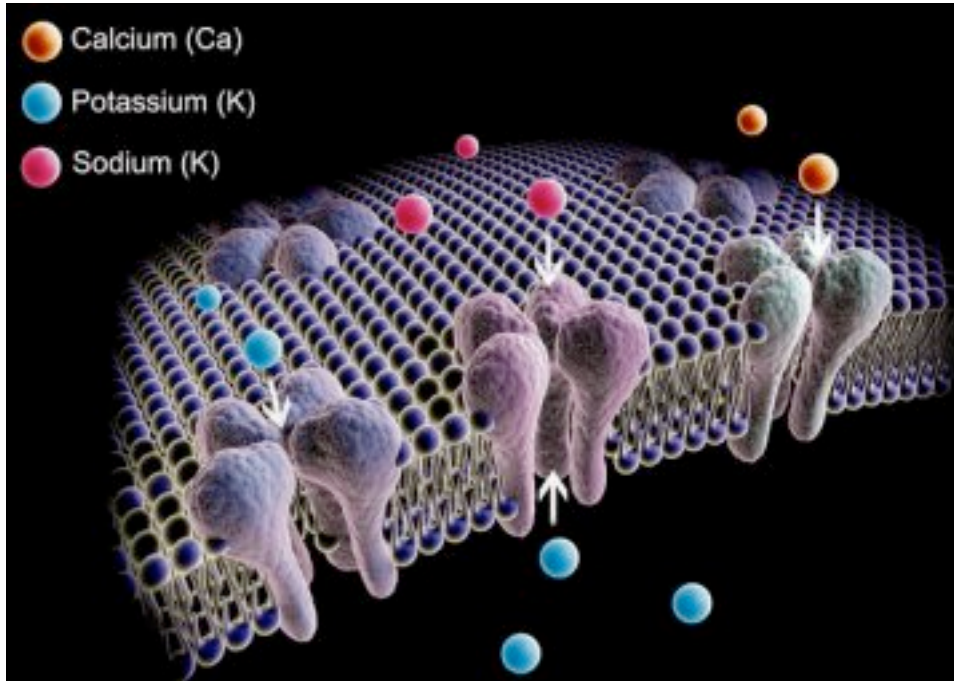


In search of a cure



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CLAIRE O'CONNELL

SOMETIMES THE key to success lies in opening or closing the right doors. And that's just what a research group at Dundalk IT hopes to do at a cellular level, in order to target diseases that to date have been poorly served by pharmaceutical drugs.

The smooth muscle research group is training their focus on ion channels, which are pores in the outer layer of cells that allow ions to enter and exit.

That door-like activity can regulate the activity of those cells, so developing therapies to target them could help regain control over processes that have gone awry in disease.

Last month saw the launch at DKIT of the Ion Channel Biotechnology Centre, a dedicated commercial arm to move the research group's discoveries closer to the market.

One of the key areas the lab has trained on is ion channels in smooth muscle, explains the group's director Prof Noel McHale.

"Smooth muscle is everywhere, it's in your arteries, your veins, your gut, your bladder – almost all the things you normally don't hear of unless they go wrong," he explains.

And when the smooth muscle of the bladder goes wrong, it can be a particularly distressing condition. So far such urinary problems have not been well served by drugs on the market, with many existing offerings inviting unwelcome side-effects like a dry mouth, which puts many patients off taking the medication, says McHale.

But the DKIT group takes a different approach, by targeting the smooth muscle itself rather than the nerves.

"We are looking at a class of drugs that acts on a potassium channel. If you open those channels you inhibit the smooth muscle and relax the bladder, so you get around the problem," he explains.

“This has already been attempted in the pharmaceutical industry but so far the drugs have been fairly useless because they are not active at the normal resting potential of the bladder. But we think we have one now that is going to make a big difference.”

Another target condition is erectile dysfunction, which has already won considerable attention from the pharmaceutical industry, as a quick glance at the average spam filter will attest.

But while Viagra may have written itself into the history books over the last decade, it doesn't work for everyone, including a high proportion of people with diabetes, explains McHale.

Once again the DKIT group is looking at a new approach to the problem – by targeting ion channels in pacemaking ‘interstitial cells’ that they believe will provide a more focused therapy.

Meanwhile, they are also building up understanding of how ion channels contribute to osteoarthritis, post-surgical swelling of lymph tissue and Hirschsprung's disease, which causes intestinal blockages in infants. Translating such discoveries from lab to market – even where there is already a lead compound emerging – is a long road, according to McHale. “The gap between having a chemical entity and its arrival in the clinic is about 12 years, and a huge amount of money,” he says.

But the commercial potential is there, and the new biotechnology centre can now focus on extracting it, says centre manager Dr Mary Earle, who took up her post in July.

“There's starting to be an acknowledgement that industry has a requirement for the type of work that we do and there's an application there,” she says.

“So by having a commercialisation arm to the research centre, the researchers can focus on their research and I can head up the commercialisation aspects and outputs from that.”

The scientists already collaborate with imaging company Andor Technology, which has now set up a demonstration lab next to the ion channel centre, and Earle hopes more industry collaboration is on the horizon, including links with companies that want to test out compounds.

“The pharmaceutical industry is highly regulated so we are able to get quite involved over the long-term in helping companies look at the toxicity of their compounds,” she says. “We will have a number of assays, it will be on a collaborative basis.”

The Ion Channel Biotechnology Centre, which was officially launched in January, has 20 associated researchers and staff and is funded by Enterprise Ireland to the tune of €2 million over four years.

Already the group is applying for patents arising from the research. So what's the plan to 2013?

“Whether we will be able to reach sustainability through spin-offs is obviously a huge question,” says Earle. “But I think there are many positive milestones we will be able to reach over that time period.”

<http://www.irishtimes.com/newspaper/innovation/2010/0205/1224263702324.html>