An apoptosis investigator

Pathological apoptosis is linked to neoplasia and neurodegeneration. **Sarit Larisch** discovered ARTS, a mitochondrial protein involved in regulating apoptosis. **Shaheen Lakhan** is inspired by her passion for research and teaching

Fact file

Name—Sarit Larisch
Position—Head of the Apoptosis and Cancer Research Laboratory, Rambam Medical Center, teaching hospital of Technion, Israel Institute of Technology
Biography—Her team discovered ARTS (apoptosis related protein in transforming growth factor signalling pathway) and found that it functions as a tumour suppressor protein. She started SimeTRA Pharm, a small biotechnology company focused on developing ARTS peptidomimetics, which penetrate cancer cells and induce selective apoptosis

What is known about apoptosis?

Apoptosis is an essential process in the development of multicellular organisms and for maintaining homoeostasis in normal cells. The roles of apoptosis include sculpting structures during development; deletion of unneeded cells and tissues; regulation of growth and cell number; and the elimination of abnormal and potentially dangerous cells. Apoptosis provides a stringent and highly effective "quality control mechanism" that limits the accumulation of harmful cells, such as self reactive lymphocytes, virus infected cells, and tumour cells. On the other hand, inappropriate apoptosis is associated with a wide variety of diseases, including AIDS, neurodegenerative disorders, and ischaemic stroke. Current knowledge on the involvement and contribution of apoptosis or its aberrant regulation in a wide variety of diseases is extensive, but much still needs to be investigated.

Why should clinicians become familiar with apoptosis?

Apoptosis plays a part at the start of many diseases and pathological syndromes. That is why clinicians should be aware of the molecular and subcellular events that are responsible for the disease they are treating. Someone who understands the complexity of disease at all possible levels is a better clinician.

Why have we not seen clinical applications almost 30 years after the discovery of apoptosis?

A lot is being done on the translational side, in particular, using knowledge about apoptotic signalling pathways to develop new drugs for cancer. Apoptosis provides a defence mechanism against cancer and degenerative disorders, such as liver disease. Most if not all cancer cells develop mechanisms to escape apoptosis. Almost all currently available cancer drugs act through the induction of apoptosis, albeit often with suboptimal efficiency and at the cost of high general cytotoxicity. Advances in understanding the precise molecular mechanisms that govern the regulation of apoptosis provide new opportunities for developing highly potent and specific cancer drugs. Currently 50 biotech companies are developing apoptosis based cancer drugs.

Are scientists doing a good job of explaining science to the masses?

I cannot testify for all scientists. Some are doing that job better than others, as in any profession. Science is the art of life, and this art—with all its remarkable complexity—should be transferred to all students and every audience. Yet it is the responsibility of both the scientists and their target audiences to ask questions, to learn more, and to want to know even more. It is the job of teachers and lecturers to fragment science into its simplest pieces to make it comprehensible to everyone.

How does passion play a part in research and medical education?

Passion is one of the absolute prerequisites for a good scientist. If you are passionate about your work, you transfer that passion to your students. Good lecturers present themselves and their attitudes as well as their knowledge. If you are persuasive in showing your students how exciting science is, the details matter less. You give students the tools to be curious, to ask the right questions, and to be interested enough to look for the answers themselves. That is the real goal.

If you weren't a scientist what would you do?

I cannot see myself doing anything but science. But a prerequisite for being a scientist is being curious. I would describe myself as an extremely curious person. Everything interests me. I love reading books and could spend all my days and most of my nights reading. But if I had the time I would learn more about theoretical physics and history. I also love listening to music and watching movies—and, most importantly, spending time with my kids and husband.

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