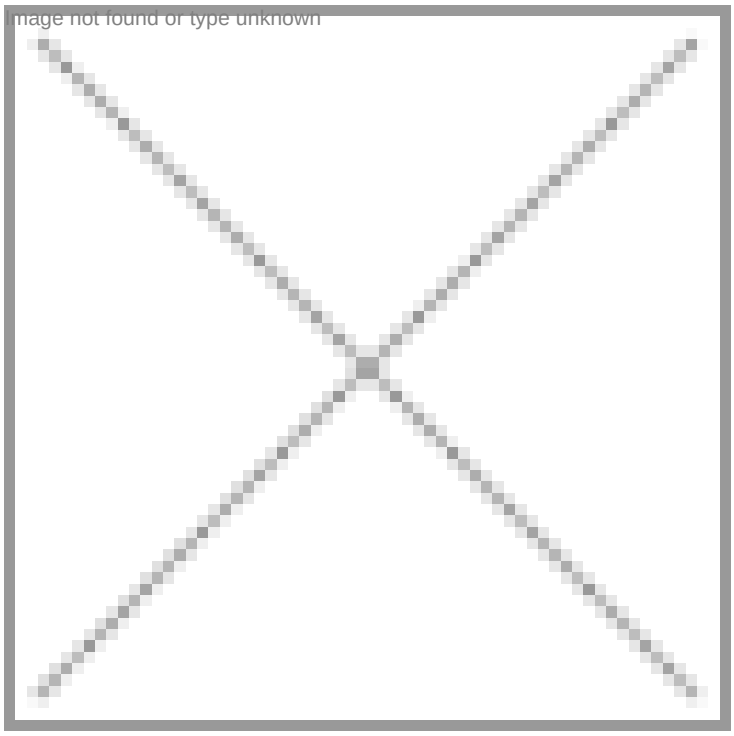
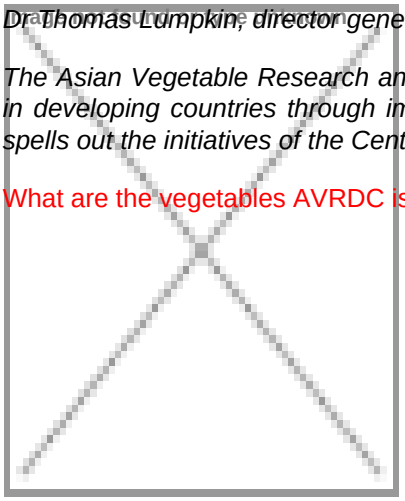
BioSpectrum
the business of Bio & Health Sciences

"If a transgenic is released anywhere, it is released everywhere"

11 September 2006 | News



"If a transgenic is released anywhere, it is released everywhere"



Dr Thomas Lumpkin, director general, AVRDC

The Asian Vegetable Research and Development Center (AVRDC) is on a mission mode to reduce poverty and malnutrition in developing countries through improved production and consumption of vegetables. In an interview, Dr Thomas Lumpkin spells out the initiatives of the Center.

What are the vegetables AVRDC is working on? Have they been released in India?

The organization works on many vegetables like the mung bean, onion, tomato, chilli pepper and egg plant among others. Many of these vegetables are important from the Indian perspective. A large number of varieties developed by the Center have been released in India. Namdhari Seeds, for example, has just released some of our material. The mung beans are very popular in India, especially in Punjab and Rajasthan and we are now popularizing it in Bihar as well, as it is resistant to the yellow mosaic virus, which is a huge problem in these parts. The Center has just developed a resistant chilli pepper variety against a disease, which produces spots on the pepper and destroys the whole vegetable. We found two sources of resistance in wild pepper species and brought them by wide crossing and back crossing into cultivated chilli material and are now in the process of releasing the resistant germplasm to the seed companies. The Center has developed yellow leaf curl virus resistant tomatoes, which have already been distributed. This is a huge viral problem in India transmitted by the white flies to the tomatoes. These are some of our products and there are a couple of others on which we are currently working.

Transgenic crops are being developed by various global public and private consortiums. What are your concerns in this arena?

The biggest concern is whether it safe for humans to eat these transgenic products. Will they have any impact on humans at all? What is their impact on the environment? Will they kill unintended insects? Will the genes move into the wild species? For example, in Canada it was found that in mustard some traits had moved from the cultivated species into its wild counterparts, with the result that some wild plants had picked up four different types of resistance with four different herbicides through promiscuous outcrossing. Hence we have to very carefully evaluate if transgenics can cause some environmental damage. I believe that if a transgenic is released anywhere, it is released everywhere in the world.

Next, how durable is the resistance due to the genetic modification that has been made? Will it have a big impact on reducing pesticides in the environment? Will it help the farmers in saving money? These are some of my primary concerns.

How should these concerns be addressed?

I think they should to be addressed through rigorous science. And we need to investigate every technical concern that is raised by the scientific community or by the public. We need to investigate and make sure that there is nothing to be worried about. So a highly disciplined process of scientific investigation is required. This area needs to be very closely guarded, just like we are careful about atomic energy and there are heavy investments in the safety for atomic energy. We need a similar level of safety at the initial stage with the transgenic organisms/crops. But at the same time we need to move the transgenic products quickly when it is confirmed that there is no cause of concern.

Is your organization working on transgenic vegetables or crops?

Yes, we are working on transgenics in public-private partnerships. For example, we are working on transgenic tomato which is resistant to some viruses. We try to limit ourselves to making transgenic products for which we cannot find natural resistances. If we can find natural resistance, then we do not use the transgenic approach. Currently we are looking at the crucifers-the cabbage, cauliflower family for resistance to the diamond black moth. This is a very amazing moth. It has an incredible ability to mutate. So if a new pesticide is developed targeting this moth, within a few years it develops resistance against it. Farmers spray very heavy pesticide dosages very frequently and cause a lot of environmental damage to unintended insects in the process of trying to kill this diamond black moth. So we are looking at a transgenic approach, which we hope that the moth cannot overcome.

Rolly Dureha

"India has been our biggest success story in providing proteomics services"

Dr Richard J Lipscombe, MD, Proteomics International, Australia

In a chat, Dr Lipscombe talks about the future of protein analysis services globally.

Proteomics is the new buzzword. How many Australian companies are engaged in proteomics based life science research?

Globally the early biotechnology companies are trying to pick up new approaches. Hence stem cell and peptide therapeutics have become popular research areas. The companies are doing a lot of work to find out new peptides, small proteins, which can be used in drug pathways. Currently, there are probably a dozen or more Australian companies working in an area which directly overlaps our interests in proteomics.

How do you foresee the future of biotechnology in Australia?

The future of biotechnology in Australia is very positive. The scientists are there, the core infrastructure is in place, a lot of subject expertise is available, there is a lot of innovation happening in areas like stem cells and we are fundamentally strong in subjects like immunology. With these core strengths as a basis, the biotechnology structure can be easily built on them.

It is a good time for biotechnology in Australia, which has just started to develop. Till now it was slow to move as there were attractive opportunities in other sectors. Now we have got a very good base in agriculture and need to look at the future. Biotechnology and information technology related to it will be one of the core areas in which Australia would invest now. There will be a lot of government support and new investment in this area.

During the last three to four years, things have been very quiet in this sector. Now there are a lot of new products coming through, patents being filed, a lot of early phase drug discovery happening, compounds going through phase I, phase II clinical trials. All this will really push the market.

How is your company structured? What are your future plans?

Proteomics International was established five years ago and we have built a small team of highly skilled scientists. Our company consists of two segments, one is into services and the other is into research and development. The service wing specializes in purely analyzing proteins. Our focus has been mass spectrometry involving high end analysis of proteins and synthesis of custom peptides as per the customer's requirement.

On the research and development side, we are currently doing a project to identify fish species as there is a lot of concern here about the premium type of fish being substituted by the low cost varieties. We are trying to develop a diagnostic biomarker test. The remarkable thing about this approach is that it can be applied to human medical research as well, where scientists are looking for biomarkers in areas of obesity and diabetics.

Our long term focus is on the drug discovery side-finding new therapeutic molecules. In about five years time, we would like to go to a stage where we start discovering early stage therapeutics, which compete in the pipeline of bigger companies.

While analyzing the samples from India, what did you find unique about them?

The general enthusiasm with which the work is done is heartening. Some of the approaches that the scientists have been taking here are quite thorough. And the work that we have done for certain Indian clients has been quite high in volumes. The uptake of proteomics in pharma and biotech companies is small in Australia, while it is being done enthusiastically on a sizeable scale in India. The Indian scientists are very much into using proteomics as a tool and getting results from it. This gives them an edge over the others in terms of higher application of the technique.

How do you view competition in the proteomics arena?

Within Australia, there are very few companies offering this kind of service. Although many university laboratories have set up core proteomics facilities during the last few years, they are not competitors as most of them do not have the infrastructure or the technical support to offer services to a wider community.

There are a few groups that offer proteomics facilities through Singapore, Korea and Taiwan but that is not a service primarily because they do not have the expertise to expand it to a service capacity. Most of the companies in the US or Europe that are looking in the proteins arena are also a little short staffed in finding proteomics experts. Hence the competition is limited and it is going to stay that way as it requires a lot of investment to set up just the basic facilities.

In India, specifically there is better training in the core sciences and have a better understanding of chemistry and protein

chemistry. And then in the next five years the institutes will start opening their own proteomics facilities and building up their expertise.

Rolly Dureha