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Functional Annotation of Essential Alternatively Spliced Isoforms

Status	Current
Competition	III
Sector	Health
Genome Centre	Genome Quebec
Project Leader	Sherif Abou-Elela

Project Description

Now that the human genome has been sequenced, the race is on to discover the functions of potential genes. But in mammals, a single gene can produce numerous protein isoforms (multiple molecular forms of given proteins) through a process called “alternative pre-mRNA splicing,” or AS. Defects in AS are believed to account for several well-known diseases, such as cystic fibrosis, thalassemia, spinal muscular atrophy and several types of cancer. But little is known about the biological mechanisms that control AS.

Dr. Sherif Abou Elela, a molecular biologist at the Université de Sherbrooke’s Faculty of Medicine, is project leader of Functional Annotation of Essential Alternatively Spliced Isoforms.

With a team of highly qualified scientists in the Sherbrooke area, Dr. Abou Elela will lead work on experimental annotation of AS isoforms in some 600 cancer-related genes that control cell proliferation and viability. The project will also study isoform specific inhibition and analyse phenotypes, while validating this knowledge by analysis of tissue samples from Canadian populations.

According to Dr. Abou Elela, an authority on high-throughput functional genomics, the Sherbrooke team is the only group in the world tackling on such a broad scale the functional annotations of cancer-related splice isoforms and the regulatory circuits that control them.

This world-leading project will maintain, recruit and train highly qualified personnel. Moreover, work on identifying AS markers is expected to lead to new diagnostic kits for use in clinical settings. The project will collaborate with Canadian pharmaceutical and biotech companies, in order to realize the broad commercial potential of new tools for identifying novel drug targets.