Inauguration of the Swiss Centre for Applied Human Toxicology

Michel F. Rossier

The new *Swiss Centre for Applied Human Toxicology* (SCAHT) was officially inaugurated on November 19th, 2009, in Geneva, in the presence of the federal and cantonal authorities and representatives of the Universities of Basel, Lausanne and Geneva. This Centre has been created on the initiative of the Swiss Confederation to promote applied research and to coordinate education and advice in human toxicology. Its recognized mission is to be a leader and focal point for human toxicology in Switzerland, by carrying out essential research projects as well as providing educational and regulatory activities, and to help build a knowledge base on the subject.

The organisation of the SCAHT will allow effective coordination of research and teaching in human toxicology across the Swiss Confederation. Indeed, this Centre, by its nature, will promote "integrative federalism" through the involvement and the support of the hosting institutions. The Centre is governed by a Strategic Board headed by Dr Kathy Riklin, member of the Swiss National Council, and is composed of representatives of the three participating Universities (Basel, Lausanne and Geneva), the Task Force Human Toxicology of the Swiss Confederation, the Swiss Society of Toxicology, the "Swiss Toxicological Information Centre", the Swiss NGO "Médecins en Faveur de l'Environnement" and the Swiss Society of the Chemical Industry.

The Centre's Directorate led by Dr Martin F. Wilks is responsible for the overall administration, coordination of the research projects and organisation of the teaching activities at both pre- and postgraduate level (Fig.1). The Director is also responsible for the regulatory toxicology team which will include two toxicologists / regulatory

affairs specialists. Their main activity, supported by the Centre's research group members, will consist of:

– Provision of services in regulatory toxicology:
  • Preparing independent scientific opinions to help risk assessment and risk management decisions by regulatory bodies.
  • Documenting and disseminating new insights and developments in applied human toxicology and advise on the need for their integration into the regulatory decision making process.
– Acquisition and conduct of third party toxicological research and consultancy services.
– Being an information resource for the Federal and Cantonal Authorities, the media or any relevant public or private institution.

The Centre currently has four core research projects funded by the Confederation and the universities:

The first one will focus on toxicological biomarker panel discovery using a "system approach": Humans are exposed to a number of drugs, food additives and environmental toxicants. Multiple biochemical interactions can occur, some known, many unknown, and, with the genetic predisposition, can contribute to or induce diseases. The human health risk assessment can therefore and should be established at the genomics, the transcriptomics, the proteomics and the metabolomics levels.

The second project will be on the genetics of infertility: A number of studies have demonstrated that embryonic, fetal or postnatal exposures to various agents can induce adult onset phenotypes or diseases. The mechanism for this early-in-development basis of adult-onset disease may involve epigenetic alterations in the genome. Environmental factors such as irradiation, chemicals and toxins have shown a potential for inducing epigenetic defects. Among them the endocrine disruptors have recently been described as, potentially, very detrimental.

Prof. Denis Hochstrasser (University of Geneva), one of the two principal founders of SCAHT and member of the strategic board, will coordinate these two core projects. The third and fourth projects will be on mechanistic toxicology and in vitro modelling, headed by Prof. Stephan Krähenbühl (University of Basel), the second founder of the Centre.

Idiosyncratic toxicity is not related to the pharmacological action of drugs. This type of toxicity can therefore, in general, not be predicted and is not detected by the usual screening methods during preclinical and clinical drug development. Although being rare, the consequences of this type of toxicity can be very severe. Idiosyncratic toxicity of drugs, for example hepatotoxicity, is a frequent cause of drug withdrawal, also with serious financial consequences for the affected pharmaceutical companies. Certain risk factors are assumed to render affected persons more susceptible to certain drugs. If such risk factors could be defined, drug toxicity could potentially be avoided by screening the patients before treatment.

Allergic drug reactions are the result of activation of certain cell types of the innate or adaptive immune system. Drugs can activate monocytes, basophiles or T cells in an unspecific fashion. Drugs can also bind to the T cell receptor (TCR), potentially leading to activation of T cells, T cell proliferation and cytotoxicity. Regarding the clinical consequences of this type of drug toxicity, experimental systems able to predict the allergic potential of drugs would be very useful.

As ambitious, large, research projects can only be accomplished collaboratively, an extended committee including the leaders of all participating research groups will exchange information and coordinate all research activities under the leadership of the two principal research coordinators and the SCAHT Director. An International Science Advisory Board will evaluate the direction and quality of the research and education programmes, as well as their usefulness for regulatory toxicology. The Science Advisory Board will also guide the Strategic Board through appropriate advice.

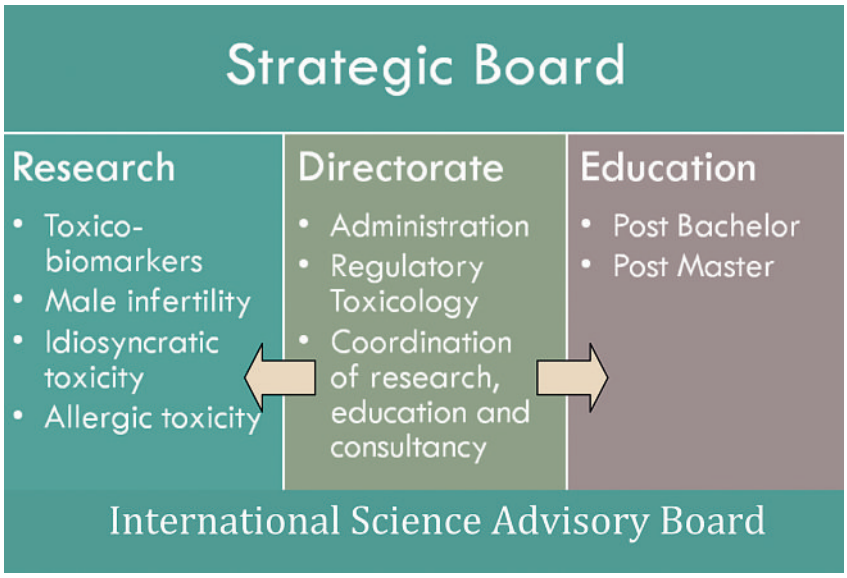

Figure 1.
Organization of the SCAHT.

Finally, the participation in the Centre of three Universities (Basel, Lausanne and Geneva), including three Faculties of Medicine and two Schools of Pharmaceutical Sciences, and two Technical Universities (HES) provides a unique chance to build pre- and postgraduate human toxicology education programmes. The collaboration of the Centre with other Swiss Universities (Zurich, Bern), the Lemanic Network of Toxicology (LNT), the Centre for Xenobiotic Risk Research (XeRR), the Centre of Competence in Chemical & Toxicological Analytics (CCCTA) and the European Centre of Pharmaceutical Medicine (ECPM) allows access to outstanding teaching capabilities in toxicology. Current activities include

Figure 2.
Inauguration of the SCAHT on November 19, 2009, in Geneva.

the creation of undergraduate and specialised master courses (MSc and MAS) for toxicology in the Lemanic and the Basel regions and modules in postgraduate formation for toxicologists (Euro-Tox modules). Such courses will be coordinated by the Centre and organised in collaboration with the participating groups and institutions, the Swiss Society of Toxicology and the local industries in Basel and in the Lemanic region.

Additional information, including the composition of boards, is available directly from the SCAHT Web site: http://www.scaht.org

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42. Jahreskongress der DGTI

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Sonniges Spätsommerwetter und ein wissenschaftliches und Fortbildungsprogramm welches die Erwartungen voll und ganz erfüllte empfing ca. 800 Teilnehmerinnen und Teilnehmer am 42. Jahreskongress der deutschen Gesellschaft für Transfusionsmedizin und Immunhämatologie (DGTI) im September 2009 in Rostock.

Um auch dem Lernbedürfnis des paramedizinischen Personals Rechnung zu tragen, begann der diesjährige Kongress mit einem Vorlauf für Labor- und Entnahmepersonal und Operatoren der Apherese. Noch vor der offiziellen Eröffnung der Veranstaltung ging es um die Fortbildung in den Bereichen Anästhesie, Hämatologie, Klinische Hämotherapie, Gerinnung, Qualitätssicherung und Hämovigilanz. Das Seminar für medizinisch-technische Assistentinnen und Assistenten widmete sich den Aspekten der täglichen Erythrozytenserologie.

Beim wissenschaftlichen Teil zeugten bereits die Postersitzungen von der Weltklasse deutschsprachiger Autoren. Die meisten der 150 Poster (davon 8 aus der Schweiz) und die mündlichen Mitteilungen wurden in Englisch präsentiert, so wie auch die Zeitschrift «Transfusion Medicine and Hemotherapy» (Vol. 36, Suppl. 1, Sept. 2009) den wissenschaftlichen Inhalt des Kongresses einheitlich in Englisch präsentiert.

Die Posterthemen konnten aufgrund der zunehmenden Anzahl der zum Gesamtgebiet der Transfusionsmedizin gehörenden Bereiche längst nicht alle abdecken, waren jedoch unterhaltend und boten häufig neues Wissen. Die behandelten Fachbereiche spiegelten den Stand der Aktivitäten in der Transfusionsmedizin sehr gut wider: Immunhämatologie, Immungenetik, Transplantationsimmunologie, Herstellung von Blutkomponenten, Therapie mit Blutkomponenten, Gewinnung und Transplantation hämatopoietischer Stammzellen, Hämostaseologie, Gewebszubereitungen, regulatorische Aspekte des Fachs, Pathogeninaktivierung von Blutkomponenten, durch Transfusion übertragbare Infektionskrankheiten, TRALI, Therapeutische Hämapherese, Maternofetale Inkompatibilität, Autoimmunerkrankungen gegen Blutzellen, demographischer Wandel und Blutversorgung, Automation und Qualitätsmanagement in der Hämotherapie. Die Symposien und die Plenarsitzungen folgten diesem Spektrum quasi deckungsgleich mit gut vorbereiteten, aktualisierten und kurzweiligen Präsentationen mit zum Teil überraschenden Neuigkeiten und interessanten Ausblicken.

Eine lang gehegte Tradition aller Jahresversammlungen der DGTI ist dem Brückenschlag in Forschung und Entwicklung zur Geräte- und Plasmakomponenten-verarbeitenden Industrie gewidmet: Acht Firmensymposien mit drei, höchstens vier Referaten ergänzten die Aussteller-Präsentationen in anschaulicher Weise.

Der feierliche Höhepunkt der 42. Jahresversammlung war die musikalisch umrahmte Eröffnungsfeier. Der 1. Vorsitzende dankte den Organisatoren und verlieh verschiedene Auszeichnungen. Walter Stangl erhielt die Volkmar-Sachs- und Wolfgang Schramm die Franz-Oehleker-Medaille. Die Emil-von-Behring-Vorlesung mit dem Titel «Hepatitisviren in der Transfusionsmedizin – besiegt?» hielt der diesjährige Preisträger Wolfram Gerlich, Leiter des Instituts für Medizinische Virologie der Justus-Liebig-Universität Giessen. Der packende Vortrag enthielt neueste Erkenntnisse über die trickreiche Art der Hepatitis-B-Viren die Diagnostik in Atem zu halten, sowie neueste Informationen über den aktuellen Stand der Impfkunde. W. Gerlich fokussierte seine Betrachtungen auf möglicherweise okkulte Hepatitis-B-Viren und beschrieb einen Blutspender, bei dem man 90 000 Kopien HBV-DNA/ml fand aber weder HbsAg noch HbeAg, und zwar wegen einer Stopp-Mutation in der Precore-Region, welche zur phänotypischen Expression eines preS1-Antigens führte. HBV-DNA-Immunkomplexe waren nachweisbar, was eine tatsächlich vorliegende HBV-Infektion untermauerte.

In halbtägigen Sitzungen wurden die einzelnen Bereiche der Arbeitsprozesse in der Transfusionsmedizin und der Immunhämatologie erläutert. Die Immunhämatologie war mit besonderen Höhepunkten bestückt. Eculizumab – ein wirksamer monoklonaler