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Guest Editorial

# The First International Symposium on Kallikreins

On September 1–3, 2005, approximately 80 scientists from more than 11 countries gathered in Lausanne, Switzerland, to participate in the 1st International Symposium on Kallikreins. We decided to organize this symposium and form a new society, tentatively called 'The Kallikrein Society' (www.kallikrein-society.org), for a number of reasons, as outlined below.

Since the mid-1980s, it has been known that the kallikrein locus on human chromosome 19q13.4 contains homologous genes of three structurally very similar serine proteases. These are kallikrein 1 (KLK1) – also known as tissue kallikrein – kallikrein 2, and kallikrein 3 – commonly known as prostate-specific antigen (PSA), the well-recognized marker of prostate cancer. Starting in 1999, investigators realized that the human kallikrein gene locus harbors many additional genes with similarity to *KLK1* (Yousef et al., 1999; Diamandis et al., 2000; Yousef and Diamandis, 2001). Among them were genes encoding serine proteases that were originally described by investigators from very different scientific fields. Extensive studies at the turn of the millennium led to the cloning of novel genes and a complete description of the human kallikrein gene locus, comprising 15 serine protease genes (Gan et al., 2000; Harvey et al., 2000; Yousef et al., 2000).

It soon became apparent that, similar to classical kallikrein-related peptidases such as PSA, many members of the extended gene family constitute novel biomarkers for various diseases, especially for cancer. It also became clear that these proteases are involved in the physiology and pathobiology of many tissues, such as skin, central nervous system, genitourinary, reproductive and endocrine systems, etc. A historical perspective on the identification of the new genes, their linkage to disease, and a description of the human kallikrein gene locus can be found in recent reviews (Yousef and Diamandis, 2001; Borgoňo and Diamandis, 2004; Borgoňo et al., 2004).

The expanded kallikrein family has attracted increased attention among investigators, many of whom have started to publish on various aspects of these proteins, including structural/genomic studies, technology developments, translational studies, regulatory aspects of the genes, functional studies of the enzymes, the possible involvement of these proteases in proteolytic cascades, and the use of these genes and proteins as biomarkers for diagnostic and prognostic applications, as well as in therapeutics (Borgono and Diamandis, 2004).

Based on the increasing number of publications and investigators working in the field, we have taken the initiative to bring these people together in the 1st International Symposium on Kallikreins in order to exchange ideas and define areas of future research. The 3 days of the symposium were full of new information on kallikrein-related peptidases, ranging from phylogenetics, crystal structures, inhibitors, therapeutic targeting, population screening for various cancer diseases, kallikrein-mediated signal transduction through receptors, protein production and purification, enzyme activity and specificity, regulation of expression, involvement of kallikrein-related peptidases in skin diseases, prognostic and predictive studies in cancer, tissue expression and immunohistochemistry, etc.

Another important task of the meeting was to initiate an upgrading of the kallikrein nomenclature. Since the early 1930s, the term kallikrein has been used to depict a hypotensive substance, which in modern terminology is synonymous with a kininogenase, i.e., an enzyme that generates either bradykinin or kallidin (lys-bradykinin) by proteolysis of plasma protein kininogens. The currently extended use of the term 'kallikrein' to also include proteins that are homologous with KLK1 is therefore a potential source of confusion. In this issue of *Biological Chemistry* we propose a new nomenclature in which the term 'kallikrein-related peptidase' is used to designate genes situated at the kallikrein locus and in which names are also provided for unique rodent genes with homology to KLK1. It is our hope that the new nomenclature will be used in the future, but for practical reasons it has not yet been fully implemented in this issue of the journal.

With the kind help of Dr. Hans Fritz, Executive Editor of *Biological Chemistry*, we have asked all participants of the 1st International Symposium on Kallikreins to prepare reviews, original papers or short reports based on their presentations at the meeting. All papers submitted have undergone the rigorous peer review of the journal and those that passed this process will be published in clusters in this and forthcoming issues of *Biological Chemistry*. We hope that these papers portray well the information presented at the meeting and will encourage new investigators to enter this field.

The success of the 1st International Symposium on Kallikreins has led to the decision to organize the 2nd International Symposium on October 16–19, 2007, on the Island of Santorini, Greece. This Symposium will precede the 5th General Meeting of the International Proteolysis Society, which will take place in Patras, Greece (October 20–24, 2007). These closely scheduled events will allow the protease research community to attend two outstanding meetings, and we hope that the number of participants and presentations will increase and that the 2nd Symposium will be even more successful than the first.

We thank all the authors who agreed to submit their papers at relatively short notice.

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