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JPK reports on the use of their NanoWizard systems in the Microscopy & Imaging Facility at the University of Calgary.

Berlin, 24th July 2012: JPK Instruments, a world-leading manufacturer of nanoanalytic instrumentation for research in life sciences and soft matter, reports on the use of their NanoWizard® AFM systems at the Microscopy & Imaging Facility (MIF) at the University of Calgary in Canada.

The Calgary Microscopy and Imaging Facility (MIF) is a world-class university-wide facility housing transmission electron microscopy (TEM), scanning electron microscopy (SEM), advanced light microscopy, atomic force microscopy (AFM), including single cell force spectroscopy (SCFS), and advanced image processing for three-dimensional electron and light microscopy, directed by Professor Matthias Amrein.

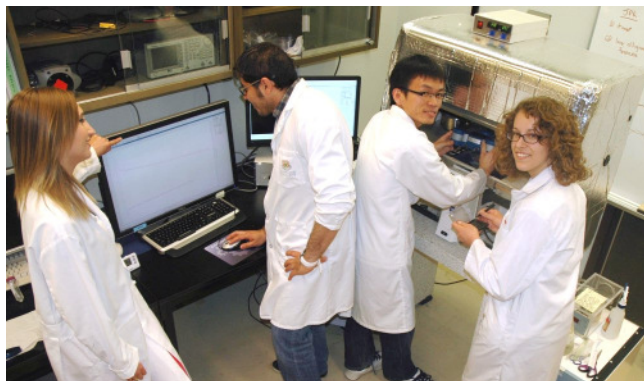
Single cell force spectroscopy at the MIF has now attracted high profile research with three NanoWizard® AFM systems from JPK, one of which is equipped with the CellHesion® module. Describing the work of the Calgary group, Professor Amrein says "While we do some work for the energy sector (to predict behaviour of nanoparticles injected into oil reservoirs) our main focus is medicine. We delve into very fundamental problems such as "how does a malaria red blood cell attach itself to a blood vessel" or "how does binding of a ligand to a cell surface receptor or contact of a crystalline surface with the plasma membrane drive lipid sorting and how will this lead to signalling" but then immediately apply it to a practical problem such as "how does contact of uric acid crystals with dendritic cells cause gout in affected joints and how can we prevent this occurrence?" We want to understand disease processes at a very fundamental level so we know how to intervene in the best possible way. For example, a chronic inflammatory disease such as gout or arteriosclerosis may be triggered by a very specific interaction of a particle (uric acid crystals, cholesterol crystals, amyloid plaque,) and specific cell (dendritic cell, macrophage, T-cell, ...). Understanding this interaction will lead to targeted treatment "block the interaction" rather than the non-specific dampening of inflammation such as by corticosteroids with its many well-documented side effects and limited efficacy."

Before developing their use of AFM in this way, their user community attempted solving their problems using flow assays (cell adhesion) and flow cytometry among other methods. While these are still in use, now they have discovered the amazing versatility and power of AFM and made this their central tool.

JPK's AFMs provide single cell studies with simultaneous real-time mechanical measurements. As Professor Amrein says, "Binding is a fundamental process which plays into a myriad of ways as to how the body develops, signals and interacts with its environment. The best tool to study this is AFM."

For more details about JPK's specialist products and applications for the bio and nano sciences, please contact JPK on +49 30533112070, visit the web site: www.jpk.com or see more on Facebook: www.jpk.com/facebook.

Attachment:



The NanoWizard has many users in the Amrein group. Here we see three of Professor Amrein's students: Fay (lipid sorting), Nawaf (lung epithelium-nano particles), Eek (lipid reservoir), Morgan (lung epithelium-nano particles).

For a high resolution copy of the image, either right click to download or contact Jezz Leckenby at Talking Science.

About JPK Instruments

JPK Instruments AG is a world leading manufacturer of nanoanalytic instruments that enable unparalleled access at the nanotechnology level. JPK was recognized as Germany's fastest growing nanotechnology company in 2007 and 2008 (Deloitte). The product portfolio is based around atomic force microscopes and optical tweezers for a wide range of applications, from soft matter physics to nano-optics, from surface chemistry to cellular and molecular biology. Leading-edge instruments from JPK are used by the most renowned research institutes across the world. Headquartered in Berlin and with operations in Dresden (Germany), Cambridge (UK), Singapore, Tokyo (Japan) and Paris (France), JPK maintains a global network of distributors and support centers and provides on the spot applications and service support to an ever-growing community of researchers.

For further information, please contact JPK directly or their marketing partners, Talking Science, who will also provide high resolution images for your use:

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