Access

Visualizing small things leads to big discoveries.

Nano Life Science Institute
Kanazawa University

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PROBING LIFE AT THE NANOSCALE

We aim to UNCOVER CELLULAR DYNAMICS through the development of nanoprobe technologies.

How cells function at the nanolevel remains one of the great unknowns.

Imaging techniques currently available have limitations in terms of resolution and quality that hinder deeper exploration. The Nano Life Science Institute (WPI-NanoLSI) is dedicated to advancing this frontier by building on pioneering technologies developed at Kanazawa University and by bringing together a 'dream team' of experts in nanometrology, life science, supramolecular chemistry, and computational science.

Takeshi Fukuma,
Director of WPI-NanoLSI

Our goal is to bridge our expertise in nanoscience with the live cell imaging field.

Successful visualization of nanoscale dynamics–the real-time workings of proteins, metabolites and other molecular assemblies–is widely anticipated to lead to breakthroughs in both fundamental biology and medical science.

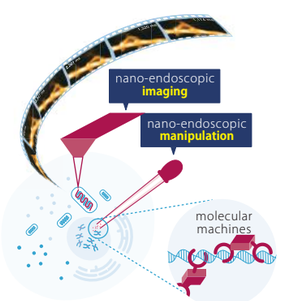
Many aspects of human development, disease and aging are just beginning to be investigated from a nanoscale perspective. Until now, our knowledge of nanoscience has mostly been applied to the fields of materials science and energy science, with great success. We are now extending our capability to explore a wider range of fundamental biological phenomena at the nanoscale.

We hope to open up a new era of life science.

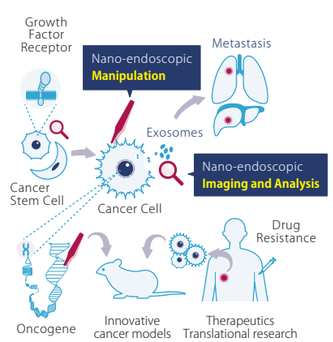
By combining the world's most advanced bio–scanning probe microscopy techniques and supramolecular chemistry, we are already developing new nanoprobe technologies. These technologies now mean scientists can go beyond the surface of cells and look deep into the interior at metabolites, nucleic acids and other building blocks of life. We would like to bring about dramatic advances in the life sciences field which will eventually lead to the establishment of a new research field, 'Nanoprobe Life Science.' NanoLSI welcomes enquiries from all those interested in delving into these unknown nanorealms.

Our Mission

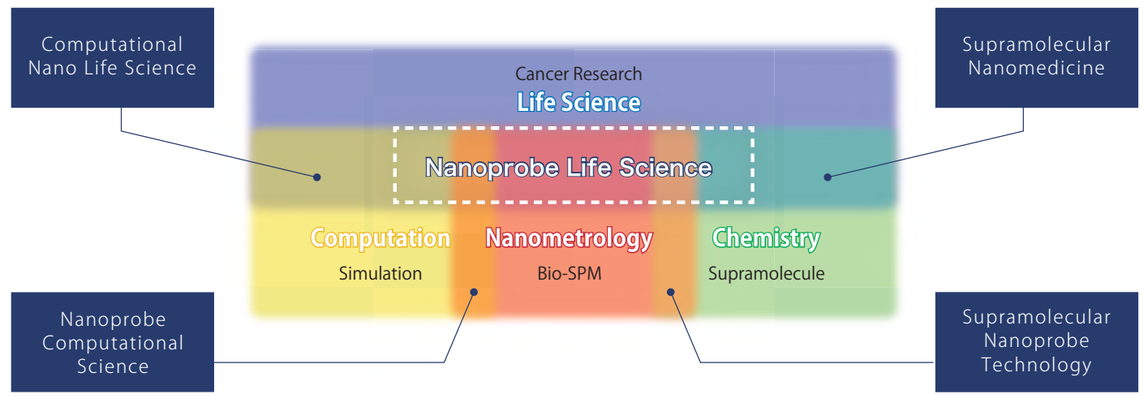
Develop **"nano-endoscopic techniques"** for the direct observation, analysis and manipulation of intracellular and cell-surface nanodynamics.



Understand the nano-level mechanisms of **basic cellular functions** and their **cancer-specific abnormalities**.



Fusion of Research Fields



PIs in Nanometrology

Takeshi Fukuma (PI) · NoriyukiKodera (PI) · Yuri E. Korchev (PI) (Imperial College London) · Kazuki Miyata (Jr. PI) · Clemens Franz (Jr. PI) · Toshio Ando Distinguished Professor of Kanazawa University

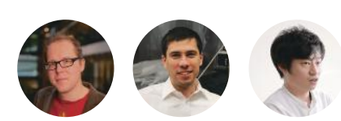
PIs in Life Science

Atsushi Hirao (PI) · Masanobu Oshima (PI) · Seiji Yano (PI) · Kunio Matsumoto (PI) · Rikinari Hanayama (PI) · Richard Wong (PI) · Miki Nakajima (PI) · Hanae Sato (Assoc. PI) · Satoshi Toda (Jr. PI) · Yusuke Miyanari (Jr. PI)

PIs in Supramolecular Chemistry

Shigehisa Akine (PI) · Tomoki Ogoshi (PI) · Katsuhiro Maeda (PI) · Mark J. MacLachlan (PI) (The University of British Columbia) · Satoshi Arai (Jr. PI)

Computational Science



Adam S. Foster(PI) (Aalto University) · Carsten Beta(PI) (University of Potsdam) · Satoru Okuda (Jr. PI)