Japan

HAN-P-01

Motonari Uesugi

Professor, Kyoto University
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Website	https://www.scl.kyoto-u.ac.jp/~uesugi/index.php
Social Media Channel	https://twitter.com/MotonariU
Research Field(s)	Chemical biology, chemoproteome, self-assembly

Academic Career

B.S., 1990, Kyoto University; Ph.D., 1995, Kyoto University (advisor: Yukio Sugiura); Postdoctoral Training, 1995-1998, Harvard University (advisor: Gregory L. Verdine); Assistant Professor, 1998-2005, Baylor College of Medicine; Associate Professor (Tenured), 2005-2009, Baylor College of Medicine; Professor, 2005-present, Kyoto University; Director, WPI-iCeMS, 2023-present, Kyoto University

Selected Publications

1. Chemoproteomic Identification of Spermidine-Binding Proteins and Antitumor-Immunity Activators. Singh, V., et al. J. Am. Chem. Soc. 146(24), 16412–16418 (2024)
2. Chemoproteomic Identification of Blue-Light-Damaged Proteins. Toh, K., et al. J. Am. Chem. Soc. 144(44), 20171–20176 (2022)
3. Magnetic Control of Cells by Chemical Fabrication of Melanin. Nishio, K., et al. J. Am. Chem. Soc. 144(37), 16720–16725 (2022)
4. Discovery of a phase-separating small molecule that selectively sequesters tubulin in cells. Ado, G., et al. Chemical Science 13, 5760-5766 (2022)
5. Chemical Genetics Reveals a Role of Squalene Synthase in TGFβ Signaling and Cardiomyogenesis. Takemoto, Y., et al. Angew. Chem. Int. Ed. 60(40), 21824-21831 (2021)
6. Discovery of Self-Assembling Small Molecules as Vaccine Adjuvants. Jin, S., et al. Angew. Chem. Int. Ed. 60(2), 961-969 (2021)
7. Discovery of a Small-Molecule-Dependent Photolytic Peptide. Takemoto, Y., et al. J. Am. Chem. Soc. 142(3), 1142-1146 (2020)
8. A small molecule that represses translation of G-quadruplex-containing mRNA. Katsuda, Y., et al. J. Am. Chem. Soc. 138, 9037-9040 (2016)

Why My Lab?

Globalized laboratory where the official language is English. Highly international and English-based graduate program available. The lab is equipped with a 70,000 compound library, FACS, 96-well format confocal microscope, and both chemistry and biology settings.

Japan

HAN-P-02

Kazuya Kikuchi

Professor, Osaka University
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Website	https://www-molpro-mls.eng.osaka-u.ac.jp/English/indexeng/indexENG.html
Research Field(s)	Fluorescent Probes, Molecular Imaging, MRI

Academic Career

B.S., 1988, Univ. of Tokyo; Ph.D., 1994, Univ. Of Tokyo (advisor: Masaaki Hirobe); Postdoctoral Training, 1994-1995, UCSD (advisor: Roger Y. Tsien), 1995-1996, the Scripps Research Institute (advisor: Donald Hilvert); Assistant Professor, 1997-2000, Univ. of Tokyo; Associate Professor, 2000-2005, Univ. of Tokyo; Professor, 2005-present, Osaka University; Distinguished Professor, 2017-present, Osaka University

Selected Publications

1. T. Nonomura, M. Minoshima, K. Kikuchi, “Light-Activated Gene Expression System Using a Caging-Group-Free Photoactivatable Dye”, Angew. Chem. Int. Ed., 63, e202416420 (2024).

2. Konishi, Y., Minoshima, M., Fujihara, K., Uchihashi, T. *Kikuchi, K. Elastic Polymer-coated Nanoparticles with Fast Clearance for 19FMR Imaging. Angew. Chem. Int. Ed., 62, e202308565 (2023).

3. Minoshima, M., Umeno, T., Kadooka, K., Roux, M., Yamada, N. *Kikuchi, K. Development of a Versatile Protein Labeling Tool for Live-Cell Imaging Using Fluorescent ß-Lactamase Inhibitors. Angew. Chem. Int. Ed., 62, e202301704 (2023).

4. Imoto, T., Minoshima, M., Yokoyama, T., Emery, B., Bull, S.D., Bito, H. *Kikuchi, K. A Photodeactivatable Antagonist for Controlling CREB Dependent Gene Expression. ACS Cent. Sci., 6, 1813-1818 (2020).

5. Hashimoto, R., Minoshima, M., Kikuta, J., Yari, S., Bull, S.D., Ishii, M., *Kikuchi, K. An Acid Activatable Fluorescence Probe for Imaging Osteocytic Bone Resorption Activity in Deep Bone Cavities. Angew. Chem. Int. Ed., 59, 20996-21000 (2020).

6. Minoshima, M., Kikuta, J., Omori, Y., Seno, S., Suehara, R., Maeda, H., Matsuda, H., Ishii, M., *Kikuchi, K. In vivo Multicolor Imaging with Fluorescent Probes Revealed the Dynamics and Function of Osteoclast Proton Pumps. ACS. Cent. Sci. 5, 1059-1066 (2019).

7. Hori, Y., Otomura, N., Nishida, A., Nishiura, M., *Kikuchi, K. Synthetic-Molecule/Protein Hybrid Probe with Fluorogenic Switch for Live-Cell Imaging of DNA Methylation. J. Am. Chem. Sci. 140, 1686-1690 (2018).

8. Akazawa, K., Sugihara, F., Nakamura, T., Matsushita, H., Mukai, H., Akimoto, R., Minoshima, M., Mizukami., S., *Kikuchi, K. Perfluorocarbon-Based 19F MRI Nanoprobes for In Vivo Multicolor Imaging. Angew. Chem. Int. Ed. 130, 16984-16989 (2018).

Why My Lab?

My lab can offer experiences of real biology experiments using the own chemical tool synthesized by graduate students by themselves.

Japan

HAN-P-04

Takeaki Ozawa

Professor, University of Tokyo
Email: ozawa@chem.s.u-tokyo.ac.jp

Website	https://analyt.chem.s.u-tokyo.ac.jp/en
Research Field(s)	Imaging, Optogenetics, Library Screening

Academic Career

I received a PhD in 1998 from the Department of Chemistry, School of Science, the University of Tokyo, under the supervisor of professor Yoshio Umezawa. After spending five years as a assistant professor, I started an independent position as an Associate Professor at the Institute for Molecular Science (IMS), Japan, since 2005. While at the University of Tokyo and the IMS, he contributed to the development of fluorescence and bioluminescence imaging probes and their application in live cells. In 2007, I joined again the Department of Chemistry, School of Science at the University of Tokyo, as a full professor.

Selected Publications

1. Optogenetic decoding of Akt2-regulated cellular metabolic signaling pathways in skeletal muscle cells using transomics analysis. G. Kawamura, et al., Science Signaling, 16, eabn0782 (2023).
2. Class 3 PI3K participates in nuclear gene transcription and co-activates the circadian clock to promote de novo purine synthesis. C. Alkhoury, et al., Nature Cell Biol., 25, 975-988 (2023).
3. N-Heterocyclic carbene-based C-centered Au(I)-Ag(I) clusters with intense phosphorescence and the ligand-specific, organelle-selective translocation in cells. Z. Lei, et al., Nature Commun., 13, 4288 (2022).
4. Mechanistic insights into cancer drug resistance through optogenetic PI3K signaling hyperactivation. Y. Ueda, et al., Cell Chem. Biol. 29, 1576-1587 (2022).
5. Sustained accurate recording of intracellular acidification in living tissues with a photo-controllable bioluminescent protein. M. Hattori, et al., Proc. Natl. Acad. Sci. USA, 110, 9332-9337 (2013).
6. Imaging dynamics of endogenous mitochondrial RNA in single living cells. T. Ozawa, et al., Nature Methods, 4, 413-419 (2007).
7. A genetic Approach to Identifying Mitochondrial Proteins. T. Ozawa, et al., Nature Biotechnol., 21, 287-293 (2003).

Why My Lab?

Our lab is comprised of a multi-disciplinary team of scientists who specialize in analytical chemistry, molecular imaging, protein engineering, medicinal chemistry, physical chemistry, chemical biology and basic biology. We are exploring new optical methods to deepen understanding of biological systems and to break new ground in applications to the world of life. For this objective, our laboratory is investigating methods for optical imaging, chemical library screening, cDNA library screening, and optogenetic modules to control enzymatic activities in complex biological systems of interest.

Japan

HAN-P-05

Midori Arai

Professor, Keio University
Email: midori_arai@bio.keio.ac.jp

Website	https://keiochembio.com/english/
Research Field(s)	Natural Products, Chemical Biology, Organic Chemistry

Academic Career

B.S., 1995, The University of Tokyo; Ph.D., 2000, The University of Tokyo (advisor: Masakatsu Shibasaki); Postdoctoral Training, 2000-2003, Osaka University (advisor: Hiroaki Sasai); 2001-2002, Harvard University (advisor: Stuart L. Schreiber); 2003-2004, RIKEN (advisor: Yukishige Ito); Assistant Professor, 2004-2006, Teikyo University; Associate Professor, 2006-2020, Chiba University, Professor, 2020-Present, Keio University (Department of Biosciences & Informatics, Faculty of Science and Technology).

Selected Publications

1. Ujie, Y. et al. Aspergillus terreus IFM 65899-THP-1 cells interaction triggers production of the natural product butyrolactone Ia, an immune suppressive compound. Sci. Rep. 2024, 14, 28278.

2. Asano, Y. et al. Activation of secondary metabolism and protease activity mechanisms in the black koji mold Aspergillus luchuensis through co-culture with animal cells. ACS Omega 2024, 9, 43129−43137.

3. Saito, S. et al. Dihydromaniwamycin E, a Heat-Shock Metabolite from ThermotolerantStreptomyces sp. JA74, Exhibiting Antiviral Activity against Influenza and SARS-CoV-2 Viruses. J. Nat. Prod. 2022, 85, 2583-2591.

4. Arai, M. A. et al. Total synthesis of lindbladione, a Hes1 dimerization inhibitor and neural stem cellactivator isolated from Lindbladia tubulina. Sci. Rep. 2020, 10, 21433.

5. Arai, M. A. et al. Target protein-oriented isolation of Hes1 dimer inhibitors using protein basedmethods. Sci. Rep. 2020, 10, 1381.

6. Arai, M. A. et al. GLI1 inhibitors isolated by target protein oriented natural products isolation(TPO-NAPI) with hedgehog inhibition. ACS Chem. Biol. 2018, 13, 2551-2559.

7. Arai, M. A. et al. Hes1 inhibitor isolated by target protein oriented natural products isolation (TPO-NAPI) of differentiation activators of neural stem cells. Chem. Sci. 2016, 7, 1514-1520.

8. Arai, T. et al. Catalytic Asymmetric Synthesis of Mixed 3,3'-Bisindoles and Their Evaluation asWnt Signaling Inhibitors. Angew. Chem. Int. Ed. 2013, 52, 2486-2490.

Why My Lab?

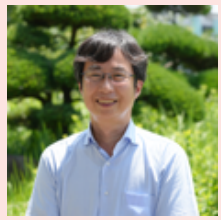
My lab can offer unique natural products, synthetic compounds, the skills of isolation and structure determination of natural products, the skills of organic chemistry and chemical biology.

Japan

HAN-P-06

Takayoshi Suzuki

Professor, Osaka University
Email: tkyssuzuki@sanken.osaka-u.ac.jp



Website	https://www.sanken.osaka-u.ac.jp/labs/cmc/en/
Research Field(s)	Medicinal chemistry, Organic chemistry, Chemical biology

Academic Career

B.S., 1995, University of Tokyo; Ph.D., 2005, University of Tokyo; Visiting Investigator, 2007-2008, Scripps Research Institute; Assistant Professor, 2003-2009, Nagoya City University; Lecturer, 2009-2011, Nagoya City University; Professor, 2011-2019, Kyoto Prefectural University of Medicine; Professor, 2019-present, Osaka University.

Selected Publications

1. Discrete prefrontal neuronal circuits determine repeated stress-induced behavioral phenotypes in male mice. Li, H., et al. Neuron, 112, 786-804.e8 (2024)

2. Discovery of Selective Histone Deacetylase 1 and 2 Inhibitors: Screening of a Focused Library Constructed by Click Chemistry, Kinetic Binding Analysis, and Biological Evaluation. Itoh, Y., et al. J. Med. Chem., 66, 15171-15188 (2023)

3. Lysine-specific histone demethylase 1A (KDM1A/LSD1) inhibition attenuates DNA double strand break repair and augments efficacy of temozolomide in glioblastoma. Alejo, S., et al. Neuro Oncol., 25, 1249-1261 (2023)

4. Evolution of Slow-Binding Inhibitors Targeting Histone Deacetylase Isoforms. Mukherjee, A., et al. J. Med. Chem., 66, 11672-11700 (2023)

5. Recent progress on small molecules targeting epigenetic complexes. Itoh, Y., et al. Curr. Opin. Chem. Biol., 67, 102130 (2022)

6. Synthetic RNA Modulators in Drug Discovery. Zamani, F., Suzuki, T. J. Med. Chem., 64, 7110-7155 (2021)

7. Identification of Potent and Selective Inhibitors of Fat Mass Obesity Associated Protein Using a Fragment- Merging Approach. Prakash, M., et al. J. Med. Chem., 64, 15810-15824 (2021)

8. Cross-Species Chromatin Interactomes Drive Heterochromatin, Enhancer, and Transcriptional Rewiring in Epstein-Barr Virus Positive Gastric Adenocarcinoma. Okabe, A. et al. Nat. Genet., 52, 919-930 (2021)

9. Metalloprotein-Catalyzed Click Reaction for In Situ Generation of a Potent Inhibitor. Miyake, Y. et al. ACS Catal., 10, 5383-5392 (2020)

10. A metabolic pathway-oriented screening targeting S-adenosyl-L-methionine reveals the epigenetic remodeling activities of naturally occurring catechols. Ogihara, S., et al. J. Am. Chem. Soc., 142, 21-26 (2020)

Why My Lab?

My lab can offer chemical biology and medicinal chemistry research with a focus on organic chemistry. I believe that the most fascinating aspect of organic chemistry is the creation of substances with new functions. Organic chemistry has the power to make the impossible possible. In our laboratory, we are using the power of organic chemistry to challenge life science research. We create biologically active molecules with new functions that have never existed before, and use them in research to elucidate life phenomena (chemical biology) and to try to apply them to pharmaceuticals (medicinal chemistry research). I want my students to be internationally active.

Japan

HAN-P-07

Kenji Monde

Professor, Hokkaido University
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Website	https://altair.sci.hokudai.ac.jp/infchb/
Social Media Channel	https://www.facebook.com/profile.php?id=100011435296382
Research Field(s)	Sphingolipid Chemical Biology, Chiral Chemistry, SWIR (Short wavelength infrared) Imaging

Academic Career

B.S., 1984, Hokkaido University; Ph.D., 1993, Hokkaido University (advisor: Prof. T. Masamune, Prof. M. Takasugi); 1988-1993, Research Associate, Hokkaido University; 1994-1996, Postdoctoral Fellow, Columbia University (Professor K. Nakanishi); 1996-2000, Assistant Professor, Tohoku University (Professor N. Harada); 2001-2010, Associate Professor, Hokkaido University; 2010-Present, Professor, Hokkaido University; 2019-2023 Visiting Senior Research Fellow of RIKEN; 2019–2023

Selected Publications

1. Malabaricone C isolated from edible plants as a potential inhibitor of SARS-CoV-2 infection. Mutmainah, et al. Sci. Rep. in press (2025)

2. Biocompatible and water-soluble shortwave-infrared (SWIR) emitting cyanine-based fluorescent probes for in vivo multiplexed molecular imaging. Swamy, M. M. M., et al. 16, 17253-17266 (2024)

3. Shortwave-infrared (SWIR) emitting annexin V for high-contrast fluorescence molecular imaging of tumor apoptosis in living mice. Swamy, M. M. M., et al. RSC Advances, 12, 19632-19639 (2022)

4. Preparation of Carbodiimides with One-Handed Axial Chirality, Taniguchi, T., et al. J. Am. Chem. Soc., 140, 15577-15581 (2018)

5. Structure-inspired design of a sphingolipid mimic sphingosine-1-phosphate receptor agonist from a naturally occurring sphingomyelin synthase inhibitor. Swamy, M. M. M., et al. Chem. Commun., 54, 12758 - 12761 (2018)

Why My Lab?

My lab can offer high-resolution NMR, and mass spectrometry, as well as equipment for normal UV-VIS and fluorescence spectroscopy, especially for a full set of chiroptical spectroscopy. The laboratory also has access to a high-precision computer capable of performing DFT calculations. Cell culture and high-throughput assay equipment for bioassays is also available. We have had PhD students from India, Malaysia, Indonesia, Mongolia, Egypt, etc., who have graduated successfully, and we currently have two Indians and one Ethiopian student enrolled.

Japan

HAN-P-08

Kaori Sakurai

Professor, Tokyo University of Agriculture and Technology
Email: sakuraik@cc.tuat.ac.jp

Website	https://web.tuat.ac.jp/~sakurai/www_English/index_english.html
Research Field(s)	Chemical Biology, Bioorganic Chemistry, Natural Products Chemistry, Carbohydrate Chemistry

Academic Career

B.S., 1996, The University of Tokyo; Ph.D., 2002, Princeton University (advisor: Dan Kahne); Postdoctoral Training, 2003-2006, Harvard University (advisor: David R. Liu); Associate Professor, 2006-2023, Professor, 2023-Present, Tokyo University of Agriculture and Technology

Selected Publications

1. Tsuruno, A., Kamoshita, S., Hosoya, S., Sakurai, K. Dichlorotriazine-based multivalent probe for selective affinity labeling of carbohydrate-binding proteins. Org. Biomol. Chem. 2024. 22, 7659-7663.

2. Fridman, M. Sakurai. K. Deciphering the biological activities of antifungal drugs with chemical probes. Angew. Chem. Int. Ed. 2023, 62, e202211927.

3. Kamoshita, S., Suto, N., Sakurai, K. Multivalent electrophilic probes for affinity labeling of carbohydrate binding proteins. ChemBioChem 2022, 23, e202100388.

4. Suto, N., Kamoshita, S., Hosoya, S., Sakurai K. Exploration of the reactivity of multivalent electrophiles for affinity labeling: sulfonyl fluoride as a highly efficient and selective label. Angew. Chem. Int. Ed. 2021, 60, 17080-17087.

5. Fukaya, K., Urabe, D., Hiraizumi, M., Noguchi, K., Matsumoto, T. Sakurai, K. Computational and experimental analysis on the conformational preferences of anticancer saponin OSW-1. J. Org. Chem. 2020, 85, 339-344.

6. Kimura, M., Sasaki, K., Fukutani, Y., Yoshida, H., Ohsawa, I, Yohda, M., Sakurai, K. Anticancer saponin OSW-1 is a novel class of selective Golgi stress inducer. Bioorg. Med. Chem. Lett. 2019, 29, 1732-1736.

7. Kitamura, K., Itoh, H., Sakurai, K., Dan, S., Inoue, M. Target identification of Yaku'amide B and its two distinct activities against mitochondrial F0F1-ATP synthase. J. Am. Chem. Soc. 2018, 140, 12189-12199.

8. Sakurai, K., Hatai, Y., Okada, A. Gold nanoparticle-based multivalent carbohydrate probes: selective photoaffinity labeling of carbohydrate-binding proteins. Chem. Sci. 2016, 7, 702-706.

Why My Lab?

My lab can offer exciting research projects aimed at unraveling the mechanism of anticancer natural products through chemical approaches. Identifying target proteins is the crucial first step in understanding their action. We design, synthesize, and apply innovative chemical probes to explore cellular destinations and capture target proteins in their native environments. We are pioneering novel

gold-nanoparticle probes to accelerate target discovery. Students in our group learn in an interdisciplinary field combining organic chemistry, biochemistry, proteomics, cell biology, and nanotechnology.

Japan

HAN-P-09

Yasubumi Sakakibara

Professor, Keio University
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Website	https://www.st.keio.ac.jp/en/tprofile/bio/sakakibara.html
Research Field(s)	Bioinformatics, Chemoinformatics, Metagenomics, Artificial intelligence

Academic Career

B.S., 1983, M.S., 1985, Tokyo Institute of Technology; Dr Sci., 1991, Tokyo Institute of Technology; Researcher, 1985-1996, Fujitsu Laboratories Ltd; Research Associate, 1992-1993, University of California, Santa Cruz; Associate Professor, 1996-2002, Tokyo Denki University; Associate Professor, 2002-2005, Keio University; Professor, 2005-present, Keio University; Specially Appointed Professor, 2023-present, Kitasato University. His research interests include bioinformatics, chemoinformatics, metagenomics, and artificial intelligence.

Selected Publications

1. Ohnuki Y, Akiyama M, Sakakibara Y. Deep learning of multimodal networks with topological regularization for drug repositioning, J Cheminform. 16, 103 (2024).

2. Uehara M, Inoue T, Hase S, Sasaki E, Toyoda A, Sakakibara Y. Decoding host-microbiome interactions through co-expression network analysis within the non-human primate intestine, mSystems. 9, e01405-23 (2024).

3. Ochiai T, Inukai T, Akiyama M, Furui K, Ohue M, Matsumori N, Inuki S, Uesugi M, Sunazuka T, Kikuchi K, Kakeya H, andSakakibara Y. Variational autoencoder-based chemical latent space for large molecular structures with 3D complexity.Commun Chem, 6: 249 (2023).

4. Akiyama M and Sakakibara Y. Informative RNA base embedding for RNA structural alignment and clustering by deeprepresentation learning. NAR Genom Bioinform, 4: lqac012 (2022).

5. Uehara M, Inoue T; Sakakibara Y. Intraintestinal analysis of the functional activity of microbiomes and its application tothe common marmoset intestine. mSystems, 25: e0052022 (2022).

6. Watanabe N, Ohnuki Y, Sakakibara Y. Deep learning integration of molecular and interactome data for protein-compound interaction prediction. J Cheminform, 13(1): 36 (2021).

7. Sato K, Akiyama M, Sakakibara Y. RNA secondary structure prediction using deep learning with thermodynamic integration, Nat Commun. 12(1), 941 (2021).

8. Hoshino, A., Jayakumar, V. et al., Sakakibara, Y. Genome sequence and analysis of the Japanese morning glory,Ipomoea nil. Nature Commun, 7:13295 (2016).

Why My Lab?

My lab can offer generative AI technology, computation server

Japan

HAN-P-10

Hideaki Kakeya

Professor, Kyoto Univerisity
Email: hkakeya@pharm.kyoto-u.ac.jp

Website	https://www.pharm.kyoto-u.ac.jp/sc-molsci/indexen.html
Research Field(s)	Natural Product Chemistry, Chemical Biology, Medicinal Chemistry

Academic Career

B.S., 1989, Keio University; Ph.D., 1994, Keio University (advisor: Kazuo Umezawa); 1994-2007, Research Scientist/Senior Scientist, RIKEN; 2007-present, Kyoto University.1995, Visiting Scientist, U.C. Davis; 1998-2000, Visiting Scientist, M.I.T.; 2009, Visiting Professor, University of Louis Pasteur, Strasbourg; 2007-present, Visiting scientist, RIKEN.

Selected Publications

1. Kaneko, K., Kakeya, H, et al. Tumescenamide C, a cyclic lipodepsipeptide from Streptomyces sp. KUSC_F05, exerts antimicrobial activity against the scab-forming actinomycete Streptomyces scabiei. J. Antibiot. 77, 353-364, 2024.

2. Iseki, S., Kakeya, H. et al. Teleocidin B-4, a PKC activator, upregulates hypoxia-inducible factor 1 (HIF-1) activity by promoting the accumulation of HIF-1α protein via the PKCα/mTOR signaling pathway. J. Nat. Prod. 87, 1666-1671, 2024.

3. Pan, C., Kakeya, H., et al. Amoxetamide A, a new anoikis inducer, produced by combined-culture of Amycolatopsis sp. and Tsukamurella pulmonis. J. Antibiot. 77, 66-70, 2024.

4. Pan, Y., Kakeya, H. et al. Bisabosqual A: a novel asparagine synthetase inhibitor suppressing the proliferation and migration of human non-small cell lung cancer A549 cells. Eur. J. Pharmacol. 960, 176156, 2023.

5. Ozaki, M., Kakeya, H. et al. Separation of amyloid β fragment peptides with racemised and isomerised aspartic acid residues using an original chiral resolution labeling reagent. Analyst, 148, 1209-1213, 2023.

6. Ikeda, H., Kakeya, H. et al. Identification of the polyether ionophore lenoremycin through a new screening strategy targeting cancer stem cells. J. Antibiot. 75, 671-678, 2022.

7. Kuranaga, T., Kakeya, H. et al. Highly sensitive labeling reagents for scarce natural products. ACS Chem. Biol. 15, 2499-2506, 2020.

8. Kakeya, H. Natural products-prompted chemical biology: Phenotypic screening and a new platform for target identification. Nat. Prod. Rep. 33, 648-654, 2016.

Why My Lab?

My lab can offer labeling reagents of amino acids, short peptide fragments, and scarce natural products, as well as a chemical genetic approach for targeting molecular target(s) of small/medium-sized molecules.

Japan

HAN-P-11

Hiroshi Abe

Professor, Nagoya University
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Website	https://biochemistry.chem.nagoya-u.ac.jp/index-e/
Social Media Channel	www.linkedin.com/in/hiroshi-abe-8541a820
Research Field(s)	RNA, therapeutics, vaccine, cancer

Academic Career

2001, Ph.D in Pharmacy, Hokkaido University, Japan; 2001-2002, Postdoctoral Fellow, Prof. Joanne Stubbe, Massachusetts Institute Technology, USA; 2002-2005, Postdoctoral Fellow, Prof. Eric Kool, Stanford University, USA; 2005-2013, Researcher, RIKEN, Japan; 2013-2015, Associate Professor, Hokkaido University, Japan; 2015- Present, Professor, Nagoya University University, Japan

Selected Publications

1. Fukuch, K., et. al. Internal cap-initiated translation provides efficient protein production from circular mRNA, Nat. Biotech. accepted.

2. Nomura, K., et. al. Synthesis of 2'-formamidonucleoside phosphoramidites for suppressing the seed-based off-target effects of siRNAs. Nucleic Acids Research , 2024, 52 , 10754–10774.

3. Ototake, M., et. al. Development of hydrophobic tag purifying monophosphorylated RNA for chemical synthesis of capped mRNA and enzymatic synthesis of circular mRNA. Nucleic Acids Research , 2024, 52 , 12141–12157

4. Inagaki, M., et. al. Cap analogs with a hydrophobic photocleavable tag enable facile purification of fully capped mRNA with various cap structures. Nature Communications | (2023)14:2657

Why My Lab?

In our laboratory, we are conducting research on the development of nucleic acid medicine. To this end, we use molecular biology and organic synthetic chemistry to synthesize mRNA and siRNA, which are candidates for use in medicine. In our laboratory, we have a chemical synthesis laboratory, as well as facilities for cell and animal experiments.

Japan

HAN-P-12

Akio Ojida

Professor, Kyushu University
Email: ojida@phar.kyushu-u.ac.jp

Website	https://bunseki.phar.kyushu-u.ac.jp/index-e.html
Research Field(s)	chemical biology, medicinal chemistry

Academic Career

Ph.D., 1995, Kyushu University; Postdoc, 1996, Institute for Molecular Science (Okazaki, Japan); Researcher, 1997, Takeda Chemical Industries; Assistant professor, 2001, Kyushu University; Lecturer, 2007, Kyoto Univerisity; Professor, 2010, Kyushu University.

Selected Publications

1. A Protein Cleavage Platform Based on Selective Formylation at Cysteine Residues, J. Am. Chem. Soc. accepted.

2. Expanding the Chemistry of Dihaloacetamides as Tunable Electrophiles for Reversible CovalentTargeting of Cysteines, J. Med. Chem. 66 , 9130–9146, (2023).

3. Fluorescence-Based Detection of Fatty Acid β Oxidation in Cells and Tissues Using QuinoneMethide-Releasing Probes, J. Am. Chem. Soc., 145, 8248-8260 (2023).

4. Discovery of chlorofluoroacetamide-based covalent inhibitors for severe acute respiratorysyndrome coronavirus 2 3CL protease, J. Med. Chem, 65, 13852-13865 (2022).

5. A multicolor and ratiometric fluorescent sensing platform for metal ions based on arene–metal-ion contact, Communications Chemistry, 4, 104 (2021).

6. Selective and reversible modification of kinase cysteines with chlorofluoroacetamides, NatureChemical Biology, 15, 250–258 (2019).

Why My Lab?

Japan

HAN-P-13

Shinya Hagihara

Team leader, RIKEN
Email: hagi@riken.jp

Website	http://molecular-bioregulation.riken.jp/index_en.html
Research Field(s)	Plant Chemical Biology

Academic Career

B.S., 1998, Kyoto University; Ph.D., 2003, Kyoto University (advisor: Isao Saito); Postdoctoral Training, 2003-2007, RIKEN (advisor: Yukishige Ito); Postdoctoral Training, 2007-2008, University of Geneva (advisor: Stefan Matile); Assistant Professor, 2008-2013, Tohoku University, Associate Professor. 2013-2018, Nagoya University, Team Leader, 2018-present, RIKEN

Selected Publications

1. Probing strigolactone receptors in Striga hermonthica with fluorescence. Tsuchiya, Y., et al. Science, 349, 864-868 (2015)
2. Discovery of Shoot Branching Regulator Targeting Strigolactone Receptor DWARF14. Yoshimura, M., et al. ACS Cent. Sci., 4, 230-234 (2018)
3. Chemical hijacking of auxin signaling with an engineered auxin-TIR1 pair. Uchida, N., et al. Nat. Chem. Biol., 14, 299-307 (2018)
4. Rapid and reversible root growth inhibition by TIR1 auxin signalling. Fendrych, M., et al. Nat. Plants, 4, 453-459 (2018)
5. A super-sensitive auxin-inducible degron system with an engineered auxin-TIR1 pair Nishimura, K., et al. Nucleic Acids Res. 48, e108 (2020)
6. Development of potent inhibitors for strigolactone receptor DWARF 14 Yoshimura, M., et al. Chem. Commun., 56, 14917-14919 (2020)
7. Development of 1,8-naphthalimide dyes for rapid imaging of subcellular compartments in plants. Kusano, S., et al. Chem. Commun., 58, 1685-1688 (2022)
8. Discovery of a Plant 14-3-3 Inhibitor Possessing Isoform Selectivity and In Planta Activity. Nishiyama, K., et al. Angew. Chem. Int. Ed., 63, e202400218 (2024)

Why My Lab?

My lab can offer research environment for interdisciplinary research between chemistry and plant biology that contribute to sustainable food production, and support program for non-Japanese students (e.g., RIKEN IPA program).

Japan

HAN-P-14

Go Hirai

Professor, Kyushu University
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Website	https://gohirailab.com/
Social Media Channel	@HiraiLab_chem
Research Field(s)	Organic Chemistry, Natural Products, Carbohydrate Chemistry

Academic Career

B.S.: Tohoku University (1997, Prof. Masahiro Hirama)
Ph.D.: Tohoku University (2002, Prof. Masahiro Hirama)
Assistant Professor@Tohoku University (2002-2004. Prof. Mikiko Sodeoka) Research Scientist@RIKEN (2004-2016, Prof. Mikiko Sodeoka) Professor@Kyushu University (2016-)

Selected Publications

1. Linkage-Editing of melibiosamine: Synthesis and biological evaluation of CH2– and CHF-linked analogs, Moritsuka, N. et al. J. Org. Chem. 89, 11909–11920 (2024).

2. Structure–activity relationship study of nitrogen signaling factors, Matoba, H. et al. Bioorg. Med. Chem. Lett. 109, 129857 (2024).

3. Linkage-Editing Pseudo-Glycans: A Reductive α-Fluorovinyl-C-Glycosylation Strategy to Create Glycan Analogs with Altered Biological Activities, Moriyama, T. et al.. J. Am. Chem. Soc. 146, 2237–2247 (2024).

4. Photoredox-catalyzed protecting-group-free C-glycosylation with glycosyl sulfinate via the Giese reaction, Miura, T. et al. Chem. Commun., 59, 8564-8567 (2023).

5. Ligand-controlled Stereoselective Synthesis and Biological Activities of 2-Exomethylene Pseudo-glycoconjugates: Discovery of Mincle-Selective Ligands, Ikazaki, T. et al. Angew. Chem. Int. Ed., 62, e202302569 (2023).

6. Effect of Alkynyl Group on Reactivity in Photoaffinity Labeling with 2-Thienyl-Substituted α-Ketoamide, Moriyama, T. et al. Chem. Eur. J. 28, e2021039 (2022).

7. Ganglioside GM3 Analogues Containing Monofluoromethylene-linked Sialoside: Synthesis, Stereochemical Effects, Conformational Behavior, and Biological Activities, Hirai, G. et al. JACS Au, 1,137-146 (2021).

8. Synthesis of DFGH-ring derivatives of physalins via one-pot construction of GH-ring and evaluation of their NF-κB inhibitory activity, Yoritate, M. et al. Org. Lett. 22, 8877-8881 (2020).

Why My Lab?

My lab can offer opportunities to acquire skills in organic synthesis as well as methodologies for evaluating biological activity and elucidating molecular functions. Our research focuses on

synthesizing uniquely designed, moderately complex molecules and uncovering their biological activities. Recently, we have also incorporated MD (Molecular Dynamics) calculations and DFT (Density Functional Theory) calculations to explore the relationship between molecular dynamics and biological activity.

Japan

HAN-P-15

Robert E. Campbell

Professor, The University of Tokyo
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Website	https://campbell.chem.s.u-tokyo.ac.jp
Social Media Channel	@campbell-lab.bsky.social
Research Field(s)	fluorescent proteins, protein engineering, biosensors

Academic Career

B.Sc., 1994, University of British Columbia; Ph.D., 2000, University of British Columbia (Advisor: Martin E. Tanner); Postdoctoral training, 2000-2003, University of California, San Diego (Advisor: Roger Y. Tsien); Assistant Professor, 2003-2009, University of Alberta; Associate Professor, 2009-2013, University of Alberta; Professor, 2013-2023, University of Alberta; Professor, 2018-present, The University of Tokyo.

Selected Publications

1. D. Cheng, Z. Ouyang, X. He, Y. Nasu, Y. Wen, T. Terai*, and R.E. Campbell*, “A high-performance chemigenetic potassium ion indicator”, J. Am. Chem. Soc., 2024, accepted.

2. S. Takeuchi, S. Imai, T. Terai* and R.E. Campbell*, “A chemigenetic indicator based on a synthetic chelator and a green fluorescent protein for imaging of intracellular sodium ion”, RSC Chem. Biol., 2024, accepted.

3. F. Chai, H. Fujii, G.N.T. Le, C. Lin, K. Ota, K.M. Lin, L.M.T. Pham, P. Zou, M. Drobizhev, Y. Nasu, T. Terai, H. Bito, and R.E. Campbell*, “Development of an miRFP680-Based Fluorescent Calcium Ion Biosensor Using End-Optimized Transposons”, ACS Sens., 2024, 9, 3394–3402.

4. S. Hario, G.N.T. Le, H. Sugimoto, K. Takahashi-Yamashiro, S. Nishinami, H. Toda, S. Li, J.S. Marvin, S. Kuroda, M. Drobizhev, T. Terai, Y. Nasu*, and R.E. Campbell*, “High performance genetically-encoded green fluorescent biosensors for intracellular L-lactate”, ACS Cent. Sci., 2024, 10, 402–416. Preprint posted to bioRxiv 2022.10.19.512892.

5. Y. Nasu*, A. Aggarwal, G.N.T. Le, C.T. Vo, Y. Kambe, X. Wang, F.R.M. Beinlich, A.B. Lee, T.R. Ram, F. Wang, K.A. Gorzo, Y. Kamijo, M. Boisvert, S. Nishinami, G. Kawamura, T. Ozawa, H. Toda, G.R. Gordon, S. Ge, H. Hirase, M. Nedergaard, M.-E. Paquet, M. Drobizhev, K. Podgorski, and R.E. Campbell*, “Lactate biosensors for spectrally and spatially multiplexed fluorescence imaging”, Nat. Commun., 2023, 14, 6598. Preprint posted to bioRxiv 2022.12.27.522013.

6. W. Zhu, S. Takeuchi, S. Imai, T. Terada, T. Ueda, Y. Nasu, T. Terai* and R.E. Campbell*, “Chemigenetic indicators based on synthetic chelators and green fluorescent protein”, Nat. Chem. Biol., 2023, 19, 38-44.

7. K.K. Tsao*, S. Imai, M. Chang, S. Hario, T. Terai*, R.E. Campbell*, “The best of both worlds: Chemigenetic fluorescent sensors for biological imaging”, Cell Chem. Biol., 2024, 31, 1652-1664.

8. Y. Nasu, Y. Shen, L. Kramer, and R.E. Campbell*, “Structure- and mechanism-guided design of single fluorescent protein-based biosensors”, Nat. Chem. Biol. 2021, 17, 509–518.

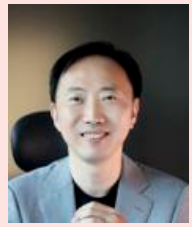
Why My Lab?

Our expertise is in the area of protein engineering, particularly as it relates to the development of fluorescent protein-based biosensors for biological imaging applications. Our research sits squarely at the interface of chemistry and biology and the tools that we produce are used by biologists in hundreds of labs around the world.

South Korea

HAN-P-19

Young-Tae Chang



Professor, POSTECH
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Website	https://ytchang.postech.ac.kr/
Research Field(s)	Chemical-based Aging Research, Fluorescent cell imaging probe, Sensor

Academic Career

BS, 1991, POSTECH; PhD, 1995, POSTECH (advisor: Sung-Kee Chung}; Postdoctral Training, 1997-2000, UC Berkeley & Scripps (advisor: Prof. Peter Schultz); Assistant Professor, 2000-2005, NYU; Associate Professor, 2005-2017, NYU; Associate Professor, 2007-2012, NUS; Professor, 2012-2017, NUS; Professor, 2017-present, POSTECH

Selected Publications

1. Development of a Mature B Lymphocyte Probe through Gating-Oriented Live-Cell Distinction (GOLD) and Selective Imaging of Topical Spleen, Cho, H.; Kwon, H. Y.; Kim, Y.; Kim, K.; Lee, E. J.; Kang, N. Y.; Chang, Y. T.* JACS Au 2024, 4, 1450-1457.

2. Theranostics application of tumor-initiating cell probe TiY in non-small cell lung cancer, Lee, Y. A.; Lek, C. C. J.; Rong, G. Wu, Z; Shathishwaran, S.; Lee, J. H. J.; Tam, W. L.; Wuestefeld, T.; Park, S. J.; Jung, S.; Kim, B.; Kang, N. Y.*; Chang, Y. T.* Theranostics 2023, 13, 1370-1380.

3. Development of a Fluorescent Probe for M2 Macrophages via Gating-Oriented Live-Cell Distinction, Cho, H.; Kwon, H. Y.; Lee, S. H.; Lee, H. G.; Kang, N. Y.*; Chang, Y. T.* J. Am. Chem. Soc. 2023, 145, 2951-2957.

4. Visualizing inflammation with an M1 macrophage selective probe via GLUT1 as the gating target, Cho, H.; Kwon, H. Y.; Sharma, A.; Lee, S. H.; Liu, X.; Miyamoto, N.; Kim, J. J., Im, S. H.; Kang, N. Y.; Chang, Y. T .* Nat. Commun. 2022, 13:5974

5. A SLC35C2 transporter-targeting fluorescent probe for the selective detection of B lymphocytes identified by SLC-CRISPRi and unbiased fluorescence library screening, Gao, M.; Lee, S. H.; Das, R. K.; Kwon, H. Y.; Kim, H. S.; Chang, Y. T.* Angew. Chem. Int. Ed. Engl. 2022, 61, 202202095

6. Fluorescent probe strategy for live cell distinction, Liu, X.; Chang, Y. T.* Chem. Soc. Rev. 2022, 51, 1573-1591

7. Neutrophil Selective Fluorescent Probe Development through Metabolism-Oriented Live-cell Distinction, Gao, M.; Lee, S. H.; Park, S. H.; Ciaramicoli, L. M.; Kwon, H. Y.; Cho, H.; Jeong, J.; Chang, Y. T.* Angew. Chem. Int. Ed. Engl. 2021, 60, 23742-23749.

8. Lipid-Oriented Live-Cell Distinction of B and T Lymphocytes, Kwon, H. Y.; Kumar Das, R.; Jung, G. T.; Lee, H. G.; Lee, S. H.; Berry, S. N.; Tan, J. K. S.; Park, S.; Yang, J. S.; Park, S.; Baek, K.; Park, K. M.; Lee, J. W.; Choi, Y. K.; Kim, K. H.; Kim, S.; Kim, K. P.; Kang, N. Y.*; Kim, K.*; Chang, Y. T.* J. Am. Chem. Soc. 2021, 143, 5836-5844.

Why My Lab?

If you come to my lab, you can learn the mechanism of aging and new method how to reverse aging, using fluorescent imaging probes and chemical biology approach. You will be an expert in fluorescent probe development, bioimaging & chemical-based aging research.

South Korea

HAN-P-20

Ja-Hyoung Ryu

Professor, Ulsan National Institute of Science and Technology
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Website	http://jhryu.unist.ac.kr
Research Field(s)	peptide assembly, nanomedicine, supramolecular chemistry

Academic Career

B.S., 2000, Yonsei University; Ph.D., 2006, Yonsei University (advisor: Myongsoo Lee); Postdoctoral Training, 2007-2011, University of Massachusetts Amherst (advisor: S. Thayumanavan); Assistant Professor, 2012-2016, Ulsan National Institute of Science and Technology; Associate Professor (Tenured), 2017-2022, Ulsan National Institute of Science and Technology; Professor, 2023-present, Ulsan National Institute of Science and Technology

Selected Publications

1. Supramolecular Senolytics, Kim, S., et al., J. Am. Chem. Soc. 145, 21991-22008 (2023)
2. Intra-Lysosomal Peptide Assembly. Jana, B., et al., J. Am. Chem. Soc. 145, 18414-18431 (2023)
3. Cancer-Selective Supramolecular Chemotherapy., Jeena, M.T., et al., Adv. Funct. Mater, 32, 2208098 (2022)
4. Intramitochondrial Co-assembly between ATP and Nucleopeptide. Choi, H., et al., Chem. Sci. 13, 6197(2022)
5. Stimuli-Responsive Adaptive Nanotoxin. Jeong, Y., et al., J.Am. Chem. Soc. 144, 5503 (2022)
6. Intramitochondrial Disulfide Polymerization. Kim, S., et al., ACS Nano 15, 14492 (2021)

Why My Lab?

The research theme of the Ryu research group is the development of new disease therapy using supramolecular approach (Supramolecular Therapeutics). The Ryu group have developed the conventional-drug-free approach for a new anti-cancer/anti-ageing therapy, that intracellular (supramolecular) polymerization inside the mitochondria induced the dysfunction of mitochondria by disrupting the membrane, resulting in the selective apoptosis of cancer/senescent cells.

South Korea

HAN-P-21

Sang Jeon Chung

Professor and Dean, Sungkyunkwan University School of Pharmacy
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Website	https://sites.google.com/g.skku.edu/chembio
Social Media Channel	NA
Research Field(s)	Antibody, ADC, DNA-encoded peptide library

Academic Career

B.S., 1990, Sungkyunkwan University; Ph.D., 1996 POSTECH (advisor: Dong H. Kim); Postdoctoral training, 1997-1998, SCRIPPS (advisor: Chi-Huey Wong) and 2000-2003, Harvard University (advisor: Gregory Verdine); Principal Scientist, 2003-2013, KRIBB, Associated and full Professor, 2013-2017, Dongguk University Dept Chemistry; 2017-present, Professor (Tenured), Sungkyunkwan University School of Pharmacy

Selected Publications

1. Improved safety of chimeric antigen receptor T cells indirectly targeting antigens via switchable adapters. Park, HB, et al. Nat. Comm. 15 (1), 1-17 (2024).

2. Prodigious catalytic activity towards reduction of 4-hydroxynitrobenzene sodium salt using one-pot synthesized ZnO-Pd nanobolts. Tripathi, R., et al. Surf. Interfaces 44, 103580 (2024)

3. Network pharmacology and molecular docking approaches to elucidate the potential compounds and targets of Saeng-Ji-Hwang-Ko for treatment of type 2 diabetes mellitus. Ko, M. et al. Comp. Biol. Med. 149, 106041 (2022)

4. Site-selective antibody–drug conjugation by a proximity-driven S to N acyl transfer reaction on a therapeutic antibody. Lee, T., et al. J. Med. Chem. 65, 7, 5751–5759 (2022).

5. Photoconjugation of an Fc-Specific Peptide Enables Efficient DAR 2 Antibody–Drug Conjugate Formation. Lee, T., et al. Org. Lett. 22 (21), 8419-8423 (2020)

6. Monitoring metal–amyloid-β complexation by a FRET-based probe: design, detection, and inhibitor screening, Lee, H. et al. Chem. Sci., 10, 1000–1007 (2019)

7. Ginkgetin, a biflavone from Ginkgo biloba leaves, prevents adipogenesis through STAT5-mediated PPARγ and C/EBPα regulation, Cho, Y., et al. Pharmacol. Res. 139, 325–336 (2019)

8. Homogeneous detection of caspase-3 using intrinsic fluorescence resonance energy transfer (iFRET), Kang, H., et al. Biosens. Bioelectron. 67, 413-418 (2015)

Why My Lab?

Join Our Chemical Biology Lab!
Located in the School of Pharmacy, our lab integrates organic chemistry and biochemistry to drive drug discovery. We develop ADCs with potent natural product payloads and innovate DNA-encoded peptide libraries for immunology and GPCR drug research. Our biochemistry team specializes in novel

antibody discovery and ADC/peptide activity studies using in vitro, in cell, and in vivo assays. Starting Fall 2025, we offer a fully funded, all-English International Graduate Program for Pharmaceutical Science. Gain expertise and contribute to groundbreaking research!

South Korea

HAN-P-22

Jun-Seok Lee

Associate Professor, Korea University
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Website	https://leegroup.chembiol.re.kr/
Social Media Channel	@junseoklee (X)
Research Field(s)	Chemical proteomics

Academic Career

B.S. 2005, POSTECH; Ph.D. 2009, New York University (advisor: Young-Tae Chang); Principal/Senior/Research Scientist 2010-2021, Korea Institute of Science and Technology; Associate Professor 2021-present, Korea University

Selected Publications

1. Aptamer and N-degron ensemble (AptaGron) as a target protein degradation strategy, Mazid M. F. A.; Shkel, O.; Ryu, E.; Kim, J.; Shin, K. H.; Kim, Y. K.; Lim, H. S.*; Lee, J. S.* ACS Chem. Biol., 2024, in press.

2. Disaggregation-Activated pan-COX Imaging Agents for Human Soft Tissue Sarcoma Hong, K. T.; Park S. B.; Murale, D. P.; Lee, J. H.; Hwang, J.; Jang, W. Y.*; Lee, J. S.* Angew. Chem. Int. Ed., 2024, 63 (24), e202405525

3. Orthogonally-Tunable and ER-Targeting Fluorophores Detect Avian Influenza Virus Early Infection Kang, T.; Haque, M. M.; Lee, B.; Hong, K. T.; Hong, S. C.; Kim, Y.; Lee, J.; Lee, J. S.*; Lee, D.* Nat. Commun., 2022, 13. 5841.

4. Discrimination of Avian Influenza Virus using Host-cell Infection Fingerprinting by Sulfinate-based Fluorescence Superoxide Probe. Hong, S. C.; Murale, D. P.; Jang, S. Y.; Haque, M. M.; Seo, M.; Lee, S.; Woo, D. H.; Kwon,J.; Song, C. S.; Kim, Y. K.; Lee, J. S.* Angew. Chem. Int. Ed., 2018, 57, 9716-9721.

Why My Lab?

My lab can offer advance chemoproteomics study.

South Korea

HAN-P-23

Seokhee Kim

Associate Professor, Seoul National University
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Website	https://shkim115.wixsite.com/skimlab
Research Field(s)	biosynthesis, peptide natural products, targeted in vivo hypermutation, continuous directed evolution

Academic Career

B.S., 2001, Seoul National University; Ph.D., 2008, Harvard University (advisor: Daniel Kahne); Postdoctoral Training, 2008-2014, MIT (Advisor: Robert T. Sauer); Assistant/Associate Professor, 2014-current, Seoul National University

Selected Publications

1. Evolutionary spread of distinct O-methyltransferases guides the discovery of unique isoaspartate-containing peptides, pamtides. Lee, H., et al. Adv. Sci., 11, 2305946 (2024)

2. Exploring the Diverse Landscape of Biaryl-Containing Peptides Generated by Cytochrome P450 Macrocyclases. Nam, H., et al. J. Am. Chem. Soc., 145, 22047-22057 (2023)

3. Discovery and Biosynthesis of Cihunamides, Macrocyclic Antibacterial RiPPs with a Unique C-N Linkage Formed by CYP450 Catalysis. An, J.S., et al. Angew. Chem. Int. Ed., 62, e202300998 (2023)

4. A dual gene-specific mutator system installs all transition mutations at similar frequencies in vivo. Seo, D., et al. Nucleic Acids Res., 51, e59 (2023)

5. Development of a genome-targeting mutator for the adaptive evolution of microbial cells. Eom, G., et al. Nucleic Acids Res., 50, e38 (2022)

6. Molecular mechanism underlying substrate recognition of the peptide macrocyclase PsnB. Song, I., et al. Nat. Chem. Biol., 17, 1123-1131 (2021)

7. Gene-specific mutagenesis enables rapid continuous evolution of enzymes in vivo. Park, H. and Kim, S. Nucleic Acids Res., 49, e32 (2021)

8. Genome Mining Reveals High Topological Diversity of ω-Ester-Containing Peptides and Divergent Evolution of ATP-Grasp Macrocyclases. Lee, H., et al. J. Am. Chem. Soc., 142, 3013-3023 (2020)

Why My Lab?

Students in my lab conduct multidisciplinary research using various tools in molecular biology, biochemistry, enzymology, chemical biology, bioinformatics, bacterial genetics, and structural biology. We frequently use genome mining, bioinformatic analyses, protein expression/purification, in vitro reconstitution of enzyme reactions, HPLC/mass/NMR-based peptide characterization, enzyme engineering, NGS analyses, and etc.

China

HAN-P-25

Dan Yang

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Website	https://en.westlake.edu.cn/faculty/dan-yang.html
Research Field(s)	fluorescent/chemiluminescent sensors, molecular probes, synthetic ion channels

Academic Career

B.Sc., 1985, Fudan University; M.A., 1987, Columbia University (advisor: Ronald Breslow); Ph.D., 1991, Princeton University (advisor: Daniel Kahne); Postdoctoral Training, 1991–1993, Harvard University (advisor: Stuart L. Schreiber); Assistant Professor (1993–1999), Associate Professor (1999–2000), Professor (2000–2004), Chair Professor of Chemistry (2005–2021), Morningside Professor in Chemical Biology (2007–2021), The University of Hong Kong; Chair Professor of Chemical Biology (2021–present), Westlake University.

Selected Publications

1. Y.-S, Li, X.-Y. Bai, D. Yang*. Development and application of cationic Nile blue probes in live-cell super-resolution imaging and specific targeting to mitochondria. ACS Central Sci. 2024, 10, 1221−1230.

2. L. Chen, ‡ T.-H. Yang,‡ X. Sun, C. C. L. Wong,* D. Yang*. Protein Tyrosine Amination: Detection, Imaging and Chemoproteomic Profiling with Synthetic Probes. J. Am. Chem. Soc. 2024, 146, 11944−11954.

3. W. Wang#, N.-K. Wong#, S.-L. Bok, Y. Xu, Y. Guo, L. Xu, M.-L. Zuo, C. M. St. Croix, G.-W. Mao, A. Kapralov, H. Bayir, V. E. Kagan, D. Yang*. Visualizing Cardiolipin In Situ with HKCL-1M, a Highly Selective and Sensitive Fluorescent Probe. J. Am. Chem. Soc. 2023, 145, 11311-11322.

4. S.-Y. Dai, D. Yang*. A Visible and Near-Infrared Light Activatable Diazo-Coumarin Probe for Fluorogenic Protein Labeling in Living Cells. J. Am. Chem. Soc. 2020, 142, 17156−17166.

5. F.-F. Shen, S.-Y. Dai, N.-K. Wong, S. Deng, A. S.-T. Wong, D. Yang*. Mediating K+/H+ Transport on Organelle Membranes to Selectively Eradicate Cancer Stem Cells by a Small Molecule. J. Am. Chem. Soc. 2020, 142, 10769−10779.

6. S. Ye, N. Hananya, O. Green, H.-S. Chen, A. Q. Zhao, J.-G. Shen, D. Shabat*, D. Yang*. A Highly Selective and Sensitive Chemiluminescent Probe for Real-Time Monitoring of Hydrogen Peroxide in Cells and Animals. Angew. Chem. Int. Ed. 2020, 59, 14326−14330.

7. X.-Y. Bai, K. K.-H. Ng, J. J. Hu, S. Ye, D. Yang*. Small Molecule-based Fluorescent Sensors for Selective Detection of Reactive Oxygen Species in Biological Systems. Annu. Rev. Biochem. 2019, 88, 605−633.

8. S. Ye, J. J. Hu, D. Yang*. Tandem Payne/Dakin Reaction: A New Strategy for Hydrogen Peroxide Detection and Molecular Imaging. Angew. Chem. Int. Ed. 2018, 57, 10173−10177.

Why My Lab?

My lab can offer various fluorescent probes for 5 different types of reactive oxygen species; mitochondria-targeting probes; specific protein-labeling probes; super-resolution imaging probes for DNA and chromatin.

China

HAN-P-26

Xiaoguang Lei

Professor, Peking University
Email: xglei@pku.edu.cn

Website	http://www.chem.pku.edu.cn/leigroup/
Research Field(s)	Chemical biology, drug discovery, biocatalysis, natural product research, organic synthesis

Academic Career

Prof. Xiaoguang Lei obtained BS in chemistry from Peking University in 2001 and a Ph.D. in organic synthesis from Boston University under the supervision of Prof. John Porco in 2006. Then he conducted postdoc work in bioorganic chemistry with Prof. Samuel Danishefsky at Columbia University from 2006 to 2008. In early 2009, he returned to China. He started his independent career as a Principal Investigator and Director of the Chemistry Center at the National Institute of Biological Sciences (NIBS) in Beijing. In early 2014, he received a tenured full professorship from Peking University and moved to the College of Chemistry at Peking University. Now he is the Boya Distinguished Professor of Chemistry and Chemical Biology and a senior PI of the Peking-Tsinghua Center for Life Sciences.

Selected Publications

1. Pei Mia, et al., Xiaoguang Lei* “A widespread plant defense compound disarms bacterial type III injectisome assembly” Science 2024, in press

2. Jun Yang, et al., Xiaoguang Lei* “Structure-guided discovery of bile acid derivatives for treating liver diseases without causing itch” Cell 2024, 187, 1-19

3. Haoran Dong, et al., Xiaoguang Lei* “Chemoenzymatic Total Synthesis of Alchivemycin A” Nature Synthesis, 2024, 3, 1124-1133

4. Bin Jiang, et al., Xiaoguang Lei*, Jianbin Yan* “Characterization and heterologous reconstitution of Taxus biosynthetic enzymes leading to baccatin III” Science 2024, 383, 622-629

5. Kai Wang, et al., Xiaoguang Lei*, Jie Qiao*, Changtao Jiang* “Microbial-host-isozyme analyses reveal microbial DPP4 inhibition as a potential antidiabetic target” Science 2023, 381, eadd5787

6. Junping Fan, et al., Xiaoguang Lei* “Structural basis of TRPV3 inhibition by an antagonist” Nature Chemical Biology 2023, 19, 81-90

7. Lei Gao, et al., Xiaoguang Lei* "FAD-dependent Enzyme-Catalysed Intermolecular [4+2] Cycloaddition in Natural Product Biosynthesis" Nature Chemistry, 2020, 12, 620-628

8. Sun, L.; et al.; Lei, X.*; Wang, X.* “Mixed Lineage Kinase Domain-like Protein Mediates Necrosis Signaling Downstream of RIP3 Kinase” Cell 2012, 148, 213-227

Why My Lab?

We are a world-leading lab for chemical biology, organic synthesis, biocatalysis and drug discovery. We offer full scholarships for all students and postdocs.

China

HAN-P-29

Billy Ng

Assistant Professor, The Chinese University of Hong Kong
Email: billyng@cuhk.edu.hk

Website	https://ngwailung.com/
Social Media Channel	https://www.linkedin.com/in/billycuhk/
Research Field(s)	chemical glycobiology, chemical proximity, medicinal chemistry, ferroptosis, drug discovery

Academic Career

Principal Investigator, School of Pharmacy, Faculty of Medicine, The Chinese University of Hong Kong (CUHK), 2019 - Present; Postdoctoral Training, Harvard Medical School, 2016 - 2019; Postdoctoral Training, University of Oxford, 2014 - 2016; Fulbright Scholar, MIT, 2013 - 2014; B.Sc. & Ph.D. in Chemistry, CUHK, 2007 -2014

Selected Publications

1. Lactone-to-lactam editing alters the pharmacology of bilobalide. JACS Au 4, 3537–3546 (2024)
2. Targeted protein O-GlcNAcylation using bifunctional small molecules. J. Am. Chem. Soc. 146, 9779–9789 (2024).
3. Design and Synthesis of Bicyclo[4.3.0]nonene Nucleoside Analogues. Org Lett 25, 9002–9007 (2023).
4. Simeprevir suppresses SARS- CoV-2 replication and synergizes with remdesivir. ACS Cent Sci 7, 792–802 (2021).
5. Coronavirus RNA proofreading: molecular basis and therapeutic targeting. Mol. Cell 79, 710–727 (2020).
6. Phase separation in viral infections. Trends Microbiol 30, 1217–1231 (2022).
7. Palladium-catalyzed arylation of carbasugars enables the discovery of potent and selective SGLT2 inhibitors. Angew Chem Int Ed 55, 13818–13821 (2016).

Why My Lab?

Located in a top medical school, our young chemical biology lab (~5 years) is passionate about mentoring international students and fostering global collaborations. We specialize in organic synthesis and molecular biology, with a strong focus on translating discoveries into clinical applications through close collaborations with clinicians.

Let’s connect: billyng@cuhk.edu.hk

Singapore

HAN-P-31

Bengang Xing

Professor, Nanyang Technological University
Email: bengang@ntu.edu.sg

Website	http://personal.ntu.edu.sg/bengang/xresearch.htm
Social Media Channel	https://x.com/xing_group_ntu
Research Field(s)	Chemical Biology, Molecular Probe & Imaging, Bio-labeling, Nano-Theranostics

Academic Career

B.S., 1994, Xinjiang Normal University; Ph.D., 2000, Nanjin University (advisor: Prof. TANG Wenxia); Postdoctoral Training, 2000-2003, The Hong Kong University of Science and Technology (advisor: Prof. XU Bing); 2003-2004 Crump Institute of Molecular Imaging, UCLA (advisor: Prof. RAO Jianghong), 2004-2006 (Molecular Imaging Program at Stanford, Stanford University (advisor: Prof. RAO Jianghong); Assistant Professor, 2006-2011, Associate Professor (Tenured), 2011-2019, Professor, 2019-present, Nanyang Technological University, Singapore

Selected Publications

1. “A Nitroreductase-activatable Metabolic Reporter for Covalent Labeling of Pathological Hypoxia in Tumorigenesis,” Z. Wang*, J. Lau, Z. Ren, Z. Gong, X. Liu, B. G. Xing*, Angew. Chem. Intl. Ed, 2024, 64, e202411636.

2. “Enzymes in Synergy: Bacteria Specific Molecular Probe for Locoregional Imaging of Urinary Tract Infection in vivo”, Y. H., et al., B. G. Xing*, Angew. Chem. Intl. Ed, 2024, 64, e202406843.

3. “Hypoxia Deactivates Epigenetic Feedbacks via Enzyme-derived Clicking Proteolysis Targeting Chimeras”; D. C. Thang, et al., B. G. Xing* Sci. Adv. 2022, 8 (50), abq2216.

4. “Cyanine-Dyad Molecular Probe for Simultaneous Profiling of Multiple Radical Species Evolution in Bacterial Infection". Z. Wang, et al., B. G. Xing*, Angew. Chem. Intl. Ed, 2021, 60, 16900.

5. “Multispectral Optoaccoustic Imaging of Dynamic Redox Correlation and Pathophysiological Progression Utilizing Upconversion Nanoprobes.” X. Z. Ai, et al., B. G. Xing*. Nature Commun, 2019, 10, 1087.

6. “Remote Regulation of Membrane Channel Activity by Site-specific Localization of lanthanide-doped Upconversion Nanocrystals.” X. Ai, et al,. B. G. Xing*. Angew. Chem. Intl. Ed, 2017, 56, 3031.

7. "In vivo Covalent Cross-linking of Photon-converted Rare-earth Nanostructures for Tumor Localization and Theranostics". X. Z. Ai, et al., B. Xing, Nature Commun. 2016, 7, 10432.

8. “Real-Time Visualization of Cell-Surface Proteolytic Enzyme Functions Using a Small-Molecule FRET Probe” J. Mu, et al., B. G. Xing, Angew Chem. Intl. Ed., 2014, 53, 14357-14362.

Why My Lab?

Our research group has been fully conducting the interdisciplinary research at the interfaces of

chemical biology, molecular probe and imaging, biolabeling, and Nano-theranostics in CCEB, NTU. Our group also fosters a collaborative and academically stimulating environment with a focus on nurturing team members' scientific growth.

India

HAN-P-32

Sandeep Verma

Professor, Indian Institute of Technology Kanpur
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Website	home.iitk.ac.in/~sverma
Social Media Channel	@Sandeep_1966 (X)
Research Field(s)	New Antibiotics, Chemical Neuroscience, Microfluidic Devices

Academic Career

2007-till date, Professor, Department of Chemistry, IIT Kanpur, India; 2003-2007, Associate Professor of Chemistry, IIT Kanpur, India
1997-2003, Assistant Professor of Chemistry, IIT Kanpur, India
1996-1997, Deutsche Forschungsgmeinschaft Fellowship, Max-Planck-Institut für experimentelle Medizin, Göttingen, Germany
1994-1996, Postdoctoral Research Associate, Department of Biochemistry and Molecular Biology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, USA
1989-1994, Doctor of Philosophy, University of Illinois, Chicago, USA
1987-1989, Master of Science, Banaras Hindu University (Organic Chemistry)

Selected Publications

1. Synthesis of a highly thermostable insulin by phenylalanine conjugation at B29 Lysine. Comms. Chem. (2024) (https://doi.org/10.1038/s42004-024-01241-z)

2. Membrane-targeting, ultrashort lipopeptide acts as an antibiotic adjuvant and sensitizes MDR Gram-negative pathogens toward narrow-spectrum antibiotics. Biomed. Pharmacother. (2024) (https://doi.org/10.1016/j.biopha.2024.116810)

3. SERS-based microfluidic screening platform for selective detection of β-amyloid peptide. Langmuir 2024, 40, 46, 24463–24470

4. Peptide-triggered IL-12 and IFN-γ mediated immune response in CD4+ T-cells against Leishmania donovani infection. Chem. Commun. 2024, 60, 4092-4095.

5. Anti-proliferative, -migratory and -clonogenic effects of long-lasting nitric oxide release in HepG2 cells. Chem. Commun. 2024, 60, 3527-3530.

6. MCC950 reduces autophagy and improves cognitive function by inhibiting NLRP3-dependent neuroinflammation in a rat model of Alzheimer's disease. Brain, Behavior, and Immunity, 2024, 116, 70-84.

7. Amyloid mimicking assemblies formed by glutamine, glutamic acid, and aspartic acid. ACS Chem. Neurosci., 2024, 15, 2253-2264.

8. Amyloidogenic propensity of metabolites in the uric acid pathway and urea cycle critically impacts etiology of metabolic disorders. ACS Chem. Neurosci., 2024, 15, 916-931

Why My Lab?

My lab can offer research at the interface of chemistry, biology and materials leading towards drugs, diagnostics, and devices. From synthesis, to biochemistry, to microfabrication to microscopy & spectroscopy. A range of tools and techniques available for research.

India

HAN-P-33

Govindaraju Thimmaiah

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Website	https://www.jncasr.ac.in/faculty/tgraju
Social Media Channel	https://x.com/govindaraju_tgr?lang=en
Research Field(s)	Alzheimer's Disease, Theranostics, Molecular Probes

Academic Career

B.Sc. (1998) and M.Sc (2000), Bangalore University; Ph.D., 2006, National Chemical Laboratory and University of Pune (Advisor: Krishna N. Ganesh); Postdoctoral Training, 2005-2006, University of Wisconsin-Madison (Advisors: Nicholas L. Abbott and Ronald T. Raines); Max Planck Institute of Molecular Physiology (Advisor: Herbert Waldmann), Assistant Professor, 2008-2014, and Associate Professor, 2008-2014 Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR); Professor, 2020-present, JNCASR.

Selected Publications

1. A natural polyphenol activates and enhances GPX4 to mitigate amyloid-β induced ferroptosis in Alzheimer's disease, P. Baruah, H. Moorthy, M. Ramesh, D. Padhi, T. Govindaraju, Chem. Sci. 2023, 14, 9427-9438.

2. Small molecules and conjugates as theranostic agents, S. Pratihar, K. Bhagavath, T. Govindaraju, , RSC Chem. Biol. 2023, 4, 826-849.

3. Multipronged diagnostic and therapeutic strategies for Alzheimer's disease, M. Ramesh and T. Govindaraju, Chem. Sci. 2022, 13, 13657-13689.

4. Rationally designed molecules Synergistically modulate multifaceted Aβ toxicity, microglial activation, and neuroinflammation, M. Ramesh, C. Balachandra, P. Andhare and T. Govindaraju, ACS Chem. Neurosci. 2022, 13, 2209-2221.

5. Combating amyloid-induced cellular toxicity and stiffness by designer peptidomimetics, M. Konar, D. Ghosh, and T. Govindaraju, RSC Chem. Biol. 2022, 3, 220-226.

6. Mechanistic insights to drug repurposing and designing hybrid drugs for Alzheimer's disease, D. Padhi and T. Govindaraju, J. Med. Chem., 2022, 65, 7088-7105.

7. Reliable fluorometric detection of SARS-CoV-2 by targeting the G-quadruplex through pH-triggered conformational polymorphism, S. Pratihar, V. Kumar, R. Agrawal, A. Singh and T. Govindaraju, ACS Sens., 2022, 7, 453-459.

8. Naphthalene monoimide derivative ameliorates amyloid burden and cognitive decline in a transgenic mouse model of Alzheimer's disease, Samanta, et al. Adv. Therap. 2021, 4, 2000225.

Why My Lab?

Our laboratory employs integrated methodologies from both chemistry and biology, utilizing in vitro and in vivo model systems. This approach enables us to investigate novel disease mechanisms and to develop diagnostic, therapeutic, and theranostic tools.

Israel

HAN-P-34

Eylon Yavin

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Website	https://eylony.wixsite.com/yavinlab
Social Media Channel	https://www.linkedin.com/in/eylon-yavin-5145993/
Research Field(s)	PNA, FIT-PNA, SNP, RNA sensing

Academic Career

B.Sc., 1994, Hebrew University of Jerusalem; M.Sc. and Ph.D., 2003, Weizmann Institute of Science (Advisor – Abraham Shanzer); Postdoc, 2003-2006, Caltech (Advisor – Jacqueline K. Barton); Lecturer, Hebrew University of Jerusalem; 2006-2012, Senior lecturer (tenured), 2012-2018 Hebrew University of Jerusalem; 2018-present, Associate Prof., Hebrew University of Jerusalem.

Selected Publications

1. S. T. Mannully, R. Mahajna, H. Nazzal, Salam Maree, H. Zheng, D. H. Appella, R. Reich, and E. Yavin, Detecting the FLJ22447 lncRNA in Ovarian Cancer with Cyclopentane based FIT-PNAs (cpFIT-PNAs), Biomolecules, 2024, 14, 609.

2. O. Tepper, H. Zheng, D. H. Appella, R. Dzikowski, and E. Yavin, A Biotinylated cpFIT-PNA Platform for the Facile Detection of Drug Resistance to Artemisinin in Plasmodium falciparum, ACS Sensors, 2024, 9, 1458-1464

3. O. Tepper, I. Peled, Y. Fastman, A. Heinberg, V. Mitesser, R. Dzikowski, and E. Yavin, FIT-PNAs as RNA sensing probes for drug-resistant Plasmodium falciparum, ACS Sensors, 2022, 7(1), 50-59.

4. O. Tepper, H. Zheng, D. H. Appella and E. Yavin, Cyclopentane FIT-PNAs: bright RNA sensors, Chem. Commun., 2021, 57, 540-543. Erratum: 2023, 59, 11593.

5. D. Hashoul, R. Shapira, M. Falchenko, O. Tepper, V. Paviov, A. Nissan, and E. Yavin, Red-emitting FIT-PNAs: "On Site" Detection of RNA Biomarkers in Fresh Human Cancer Tissues, Biosensors & Bioelect. 2019, 137, 271-278.

6. T. Soudah, S. Khawaled, R. I. Aqeilan, and E. Yavin, AntimiR-155 Cyclic Peptide–PNA Conjugate: Synthesis, Cellular Uptake, and Biological Activity, ACS Omega 2019, 4, 13954-13961.

Why My Lab?

My lab is focused on Peptide Nucleic Acid (PNA) chemistry. My lab can offer PNAs as tools for RNA silencing and as splice switching oligonucleotides that are cell permeable. In addition, we can offer these molecules (FIT-PNAs) as RNA sensing molecules that fluoresce upon RNA hybridization. PNAs are stable and have a very high affinity to complementary RNA and DNA. In addition, we may tailor these sensing molecules to detect specific point mutations related to disease and/or drug resistance.

Israel

HAN-P-35

Micha Fridman

Professor, Tel Aviv University
Email: mfridman@tauex.tau.ac.il

Website	https://www.fridman-lab.sites.tau.ac.il/
Social Media Channel	@mifridm
Research Field(s)	Chemical Biology; Chemical Microbiology; Antimicrobials; Glycochemistry; Glycobiology

Academic Career

B.A., 2000, Technion – Israel Institute of Technology; M.Sc., 2001, Technion – Israel Institute of Technology (advisor: Prof. Timor Baasov); Ph.D., 2005, Technion – Israel Institute of Technology (advisor: Prof. Timor Baasov); Postdoctoral Training, 2005-2008, Harvard University (advisor: Prof. Daniel E. Kahne); Senior Lecturer, 2008-2013, Tel Aviv University; Senior Lecturer with Tenure, 2013-2016, Tel Aviv University; Associate Professor, 2016-2020, Tel Aviv University; Professor, 2020-present, Tel Aviv University.

Selected Publications

1. Localizing Antifungal Drugs to the Correct Organelle Can Markedly Enhance their Efficacy. Benhamou, R. I., et al. Angew. Chem. Int. Ed., 57(21), 6230–6235 (2018).

2. Cationic Amphiphiles Induce Macromolecules Denaturation and Organelle Decomposition in Cells of Fungal Pathogens. Jaber, Q. Z., et al. Angew. Chem. Int. Ed., 57(50), 16391–16395 (2018).

3. Chemical Modifications Reduce Auditory Cell Damage Induced by Aminoglycoside Antibiotics. Louzoun Zada, S., et al. J. Am. Chem. Soc., 142, 3077–3087 (2020).

4. Elevated Vacuolar Uptake of Fluorescently Labeled Antifungal Drug Caspofungin Predicts Echinocandin Resistance in Pathogenic Yeast. Jaber, Q. Z., et al. ACS Cent. Sci., 6(10), 1698–1712 (2020). Highlighted in: Boon Shing, L., et al. ACS Cent. Sci., 6(10), 1651–1653 (2020).

5. Benzylic Dehydroxylation of Echinocandin Antifungal Drugs Restores Efficacy against Resistance Conferred by Mutated Glucan Synthase. Logviniuk, D., et al. J. Am. Chem. Soc., 144(13), 5965–5975 (2022).

6. Reshaping Echinocandin Antifungal Drugs To Circumvent Glucan Synthase Point-Mutation-Mediated Resistance. Jospe-Kaufman, M., et al. Angew. Chem. Int. Ed., 63(9), e202314728 (2024).

7. Enzymatic Activity Profiling Using an Ultra-Sensitive Array of Chemiluminescent Probes for Bacterial Classification and Characterization. Shelef, O., et al. J. Am. Chem. Soc., 146(8), 5263–5273 (2024).

8. Chiral Fluorescent Azole Probes Shed Light on Resistance, Time-Dependent Uptake and Subcellular Distribution in Candida Species. Koren, V., et al. JACS Au, 4(8), 3157–3169 (2024).

Why My Lab?

Prof. Micha Fridman's Laboratory at Tel Aviv University is leading research on chemical microbiology,

focusing on both antifungal and antibacterial compounds. The lab aims to understand microbial resistance mechanisms and develop new strategies for drug design. Key areas of research include targeted drug delivery, carbohydrate-based antimicrobial compounds, and using advanced imaging techniques to visualize drug uptake and distribution within microbial cells. This work helps identify drug resistance mechanisms and new therapeutic targets. Equipped with state-of-the-art organic chemistry, microbiology, and fluorescence microscopy labs, Prof. Fridman's research combines synthetic chemistry and advanced imaging to tackle the global challenge of antimicrobial resistance.

Israel

HAN-P-36

Doron Shabat

Prof. of Chemistry, Tel Aviv University
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Website	https://www.shabatlab.sites.tau.ac.il
Research Field(s)	Chemiluminescence, Molecular probes, 1,2-dioxetanes

Academic Career

Doron Shabat studied chemistry at the Technion-Israel Institute of Technology between 1987 and 1990. After obtaining his B.Sc. degree, he continued toward his Ph.D. degree. Upon the completion of his Ph.D. thesis in 1997, he joined the Scripps Research Institute in La Jolla, California as a postdoctoral fellow. In 2000, he returned to Israel to start his independent career in the School of Chemistry at Tel Aviv University as a senior lecturer. He was promoted to the rank of associate professor in 2005 and to full professor in 2008.

Selected Publications

1. Green, O., Eilon, T., Hananya, N., Gutkin, S., Bauer, CR., Shabat, D. “Opening a Gateway for Chemiluminescence Cell Imaging: Distinctive Methodology for Design of Bright Chemiluminescent Dioxetane Probes”, ACS Cent. Sci., 2017, 4, 349-58.

2. Tannous, R., Shelef, O., Gutkin, S., David, M., Leirikh, T., Ge, L., Jaber, J., Zhou, Q., Ma, P., Fridman, M., Spitz, U., Houk, K.N., Shabat, D., “Spirostrain-Accelerated Chemiexcitation of Dioxetanes Yields Unprecedented Detection Sensitivity in Chemiluminescence Bioassays”, ACS. Cent. Sci., 2024, 10, 28–42.

3. David, M., Leirikh, T., Shelef, O., Gutkin, S., Kopp, T., Zhou, Q., Ma, P., Fridman, M., Houk, K.N., Shabat. D., “Chemiexcitation Acceleration of 1, 2-Dioxetanes via a Spiro-Fused Inductive Electron-Withdrawing Motifs”, Angew. Chem., 2024, doi.org/10.1002/anie.202410057.

4. Shelef, O., Kopp, T., Tannous, T., Jospe-Kaufman, M., Arutkin, M., Reuveni, S., Shabat, D., Fridman, M. “Enzymatic Activity Profiling Using an Ultra-Sensitive Array of Chemiluminescent Probes for Bacterial Classification and Characterization”, J. Am. Chem. Soc., 2024, 146, 5263–5273.

Why My Lab?

My lab has expertise in molecular probes design with a particular interest in chemiluminescence.

Israel

HAN-P-37

Yuval Ebenstein

Professor, Tel Aviv University
Email: uv@tauex.tau.ac.il

Website	https://www.nanobiophotonix.sites.tau.ac.il/
Research Field(s)	DNA chemistry, Epigenetics, Genomics

Academic Career

B.S., 2000, Hebrew University of Jerusalem; Ph.D., 2007, Hebrew University of Jerusalem (advisor: Uri Banin); Postdoctoral Training, 2006-2011, UCLA (advisor: Shimon Weiss); Assistant Professor, 2011-2016, Tel Aviv University; Associate Professor (Tenured), 2016-2021, Tel Aviv University; Professor, 2021-present, Tel Aviv University

Selected Publications

1. https://doi.org/10.1101/2022.10.31.513813
2. https://doi.org/10.1016/j.dnarep.2023.103533
3. https://doi.org/10.1021/acsnano.2c12755
4. https://doi.org/10.1093/nar/gkac460
5. https://doi.org/10.1016/j.bpr.2021.100017
6. https://doi.org/10.1016/j.copbio.2018.09.006

Why My Lab?

The main focus of the group is Single-molecule genomics but we have activity also in development of new optical detection schemes and novel imaging techniques. We explore genomes utilizing tools and reagents from the realm of nano-technology. We try learning new things about these systems by zooming in on individuals - single cells, single chromosomes and single molecules. Research in the lab is highly multi and inter disciplinary and our team is composed of chemists, biologists and physicists who are interested in learning from each other and doing some great (but sometimes risky...) stuff at the very forefront of science.