Faculty of Science
Nara Women’s University
Hello everyone. My name is Toshio Watanabe, and I'm the head of the Faculty of Science. My specialty is genetic function analysis using mice.

In current scientific research, rather than digging deep into a specific field as in the traditional "fox hole" method, we have moved into an era full of changes as new fields of study are born out of an organic linkage of differing fields. Here at Nara Women's University, in order to ensure that all of you living in this era full of change can make use of your specializations through activities in a variety of fields in the future, our program includes the fundamentals of physical sciences and courses designed to develop a broad perspective and applied skills that will be useful globally.

"Only those who can adapt will survive." This is a quote from "The Origin of Species" by the famous creator of the evolutionary theory, Darwin. To achieve an educational program that will produce students with the flexibility to handle changes, we have adopted a unique structure with just two departments and six courses in order to lower the barrier between fields. As a result, in addition to deep study of specialized fields, you can also learn about various advanced and diverse areas of fusion where multiple fields intersect. Our style of scientific research is driven by the idea of "I don't know so I'll give it a try." I truly hope that all of you will take this idea to heart and develop the ability to apply it to your studies. If you want to get a good look at the fairy of science, you need the eyes of a fairy. All I'll say is, the keys to success are courage and guts!

As one of just two national women's universities in Japan, Nara Women's University sends talented women out into the world, and we have been working hard for many years to achieve a gender-equal society where both sexes can respect each other and all people can make the most of their own unique sensibilities and skills. Unfortunately, the ratio of women in science and technology fields in this country is currently low. In response to these circumstances, we are currently undertaking various new initiatives to support female researchers and are working to enhance our education and research environment, making intense efforts to assure diversity in science fields for the future.

In these abundant natural surroundings of Nara (where there are even deer on campus) and this education and research environment designed with careful consideration for women, let us journey together into the wonderful world of science.
SUBJECT OF RESEARCH: 3-manifold, knots and links

SELECTED PUBLICATIONS:
1. A knot with destabilized bridge spheres of arbitrarily high bridge number
   Jang Y, Kobayashi T, Ozawa M, Takao K.
   DOI: 10.1112/jlms/jdw004
2. Bridge splittings of links with distance exactly n
   Ido A, Jang Y, Kobayashi T.
   DOI: 10.1016/j.topol.2015.05.028
3. Heegaard splittings of distance exactly n
   Ido A, Jang Y, Kobayashi T.
   DOI: 10.2140/agt.2014.14.1395
4. Distance of bridge surfaces for links with essential meridional spheres
   Jang Y.
   DOI: 10.2140/pjm.2014.267.121
5. A G-family of quandles and handlebody-knots
   Isii A, Iwakiri M, Jang Y, Oshiro K.

SUBJECT OF RESEARCH: Group Theory

SELECTED PUBLICATIONS:
1. Hard spheres on the gyroid surface
   Dotera T, Kimoto M, Matsuzawa J.
   DOI: 10.1098/rsfs.2011.0092
2. Hyperbolic Tiling on the Gyroid Surface in a Polymeric Alloy
   Dotera T, Matsuzawa J.
   RIMS Kokyuroku, 1725: 80-91 (2011)
3. Representations of the normalizers of maximal tori of simple Lie groups
   Matsuzawa J, Takahashi M.
4. Symmetry and Group Theory
   Matsuzawa J.
   Kobunshi (High Polymers, Japan), 57(Febuary): 66-70 (2008)
Fourier analysis, wavelet analysis, and function spaces

MORITOH Shinya / Professor
moritoh(at)cc.nara-wu.ac.jp

EDUCATION: 1993 Graduate School of Mathematical Sciences, The University of Tokyo
1991 Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
Applications of Fourier and wavelet transforms to function spaces

SELECTED PUBLICATIONS:
1. Detection of singularities in wavelet and ridgelet analyses
   Moritoh S.
2. A Further Decay Estimate for the Dziubanski-Hernandez Wavelets
   Moritoh S. Tomoeda K.

Knot theory, 3-Manifold topology, foliations, and Origami

MURAI Hiroko / Associate Professor
murai@cc.nara-wu.ac.jp

EDUCATION: 2007 Graduate School, Doctoral Research Course in Human Culture, Nara Women’s University
2002 Faculty of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Nara Women’s University

SUBJECT OF RESEARCH:
1. Knots and links in 3-manifolds
   Murai H.
2. Foliations on knot exterior
3. Categorification of knot invariants and graph polynomials
4. Geometry of Origami

SELECTED PUBLICATIONS:
1. Gap of codimension one foliations
   Murai H.
2. Gap of the depths of leaves of foliations
   Murai H.
   Moritoh S.
4. A Further Decay Estimate for the Dziubanski-Hernandez Wavelets
   Moritoh S. Tomoeda K.
5. Comparison of integral and discrete Ostrowski’s inequalities in the plane
   Moritoh S. Tanaka Y.

Number theory and varieties

OKAZAKI Takeo / Associate Professor
okazaki@cc.nara-wu.ac.jp

EDUCATION: 2004 Graduate School of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
Automorphic Representation and Number Theory

SELECTED PUBLICATIONS:
1. On some Siegel threefold related to the tangent cone of the Fermat quartic surface.
   Yamauchi T, Okazaki T.
   Advances in Theoretical and Mathematical Physics 21(3) (2017)
2. Endoscopic lifts to the Siegel modular threefold related to Klein’s cubic threefold
   Yamauchi T, Okazaki T.
3. $L$-functions of $S_3(\Gamma(2,4,8))$
   Okazaki T.
4. $S_3$-functions of $S_3(\Gamma(2,4,8))$
   Yamauchi T, Okazaki T.
5. On $L$-functions of $S_3(\Gamma(2,4,8))$
   Okazaki T.

Probabilistic models of statistical mechanics

SHINODA Masato / Professor
shinoda@cc.nara-wu.ac.jp

EDUCATION: 1994 Graduate School of Mathematical Sciences, The University of Tokyo
1992 Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
Critical behaviors of percolation models, phase transition

SELECTED PUBLICATIONS:
1. Uniform spanning trees on Sierpinski graphs
   Elmar Teufl, Stephan Wagner, Shinoda M.
2. Existence of phase transition of percolation on Sierpinski carpet lattices, Shinoda M.
3. Non-existence of phase transition of oriented percolation on Sierpinski carpet lattices, Shinoda M.
4. Existence of phase transition of percolation on Sierpinski carpet lattices, Shinoda M.
5. Flexible reward plans for crowdsourced tasks
   Sakurai Y, Oyama S, Yokoo M, Shinoda M.
   PRIMA 2015: Principles and Practice of Multi-Agent Systems, the series Lecture Notes in Computer Science, 9387: 400-415 (2015)
## Probability and stochastic analysis

**TAKEMURA Tomoko / Associate Professor**
Sm18031@cc.nara-wu.ac.jp

**EDUCATION:** 2010 Graduate School, Doctoral Research Course in Human Culture, Nara Women’s University

**ACADEMIC DEGREES:** Ph.D. Nara Women’s University

<table>
<thead>
<tr>
<th>SUBJECT OF RESEARCH:</th>
<th>SELECTED PUBLICATIONS:</th>
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<tbody>
<tr>
<td></td>
<td>2. Asymptotic behavior of Lévy measure density corresponding to inverse local time.</td>
</tr>
</tbody>
</table>

## Analytic number theory

**UMEGAKI - ICHIHARA Yumiko / Associate Professor**
ichihara@cc.nara-wu.ac.jp

**EDUCATION:** 2002 Nagoya University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

<table>
<thead>
<tr>
<th>SUBJECT OF RESEARCH:</th>
<th>SELECTED PUBLICATIONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Theory, Automorphic L-function</td>
<td>3. The first moment of L-functions of primitive forms on ( \Gamma_0(p) ) and a basis of old forms. Ichihara Y.</td>
</tr>
<tr>
<td></td>
<td>4. Estimates of a certain sum involving coefficients of cusp forms in weight and level aspects Ichihara Y.</td>
</tr>
</tbody>
</table>

## Differential geometry of arithmetic manifolds

**TSUNODA Shuichiro / Professor**
Sm37052@cc.nara-wu.ac.jp

**EDUCATION:** 1981 Graduate School, Division of Mathematics, The University of Tokyo
1979 Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Doctor of Science, Osaka University

<table>
<thead>
<tr>
<th>SUBJECT OF RESEARCH:</th>
<th>SELECTED PUBLICATIONS:</th>
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</thead>
<tbody>
<tr>
<td>Ricci curvature of arithmetic manifolds</td>
<td>1. Spatiotemporal Time, Reports of Interdisciplinary Symposium of Mathematics and Physics, 39-43, 2004</td>
</tr>
<tr>
<td>Linear programming</td>
<td>2. (partial contribution) Open Problem of Mathematics, SAIENSU-SHA Co., Ltd. 182-188, 2003</td>
</tr>
</tbody>
</table>

## Study on hyperbolic structures of low-dimensional manifolds

**YAMASHITA Yasushi / Professor**
yamasita@ics.nara-wu.ac.jp

**EDUCATION:** 1991 Graduate School of science and engineering, Tokyo Institute of Technology

**ACADEMIC DEGREES:** Ph.D. Tokyo Institute of Technology

<table>
<thead>
<tr>
<th>SUBJECT OF RESEARCH:</th>
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</tr>
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<tbody>
<tr>
<td>Hyperbolic geometry</td>
<td>3. Creating software for visualizing Kleinian groups Ymashita Y.</td>
</tr>
<tr>
<td></td>
<td>4. Linear slices of the quasi-Fuchsian space of punctured tori Komori Y, Ymashita Y.</td>
</tr>
</tbody>
</table>

| DOI: 10.2140/agt.2013.13.927 | 1. Non-hyperbolic automatic groups and groups acting on CAT(0) cube complexes Lecture Note Ser., IMS, NUS 23: 159-190 (2012) DOI: 10.1142/9789814401364_0005 |

Nonlinear PDE and Fluid Mechanics

YANAGISAWA Taku / Professor
taku@cc.nara-wu.ac.jp

EDUCATION: 1985 Graduate School of Science, Hokkaido University
1983 Department of Mathematics, Faculty of Science, Hokkaido University

ACADEMIC DEGREES: Ph.D. Hokkaido University

SUBJECT OF RESEARCH:
1. Hodge decomposition of vector fields and its application to fluid dynamics
2. Free boundary problems in plasma dynamics
3. Initial boundary value problems for symmetric hyperbolic systems
4. Singularities of the solutions to compressible and incompressible Euler equations
5. Stability of boundary layers

SELECTED PUBLICATIONS:
1. Global compensated compactness theorem for general differential operators of first order
Kozono H, Yanagisawa T.
2. L’H
ermho{}lz Decomposition and Its Application to the Navier-Stokes Equations
Kozono H, Yanagisawa T.
3. Leray’s inequality in general multi-connected domains in \(\mathbb{R}^n\)
Kozono H, Yanagisawa T.

Experimental study of new state matter of deconfined quarks and gluons (QGP).

HACHIYA Takashi / Assistant Professor / hachiya@cc.nara-wu.ac.jp

EDUCATION: 2008 Department of Physical Science, Graduate school of Science, Hiroshima University
1999 Department of Physics, Faculty of Science, Hiroshima University

ACADEMIC DEGREES: Ph.D Hiroshima University

SUBJECT OF RESEARCH:
1. Properties of QGP using bottom and charm quark production in high energy ion collisions.
2. Research and Development of the silicon detector for precise tracking.

SELECTED PUBLICATIONS:
1. Single electron yields from semileptonic charm and bottom hadron decays in Au+Au collisions at \(\sqrt{s_{NN}}=200\) GeV. A. Adare et al. (PHENIX Collaboration)
2. Centrality dependence of charm production from single electrons measurement in Au + Au collisions at \(\sqrt{s_{NN}} = 200\) GeV. S.S. Adler et al. (PHENIX collaboration)

Experimental study of elementary particles using high-energy colliders

HAYASHII Hisaki / Professor
hayashii@cc.nara-wu.ac.jp

EDUCATION: 2008 Division of Physics, Graduate School of Science, Nagoya University
1999 Department of Physics, Faculty of Science, Shizuoka University

ACADEMIC DEGREES: Ph.D. Nagoya University

SUBJECT OF RESEARCH:
1. Lepton flavor violating tau decays for New physics searches
2. CP violation in tau-lepton hadronic decays
3. Hadronic structure function, quark confinement, strange quark mass, muon anomalous magnetic moment, Holography
4. CP violation in B and D mesons
5. Experimental study of particle physics using high energy e+e− colliders

SELECTED PUBLICATIONS:
1. The Physics of B Factories (tau lepton chapter)
Hayashii H, Belle and BaBar collab.
2. Search for CP violation in \(\tau \rightarrow K^\mu \nu \tau\) decays
Bachhberger M, Hayashii H, Belle collab.
3. High statistic study of the \(\tau \rightarrow \pi^0 \nu \tau\) decay
Fujikawa M, Hayashii H, Belle collab.
### Subject of Research:

1. Structure and Formation of Meson-Nucleus bound systems
2. Hadron reactions at Intermediate and High energy regions

### Selected Publications:

1. Deeply bound pionic states in heavy nuclei
   Yamazaki T, Hirenzaki S, Hayano R S, Toki H.
2. Formation of eta-prime(958) - mesic nuclei and axial U(A)(1) anomaly at finite density
   Nagahiro H, Hirenzaki S.

---

### Subject of Research:

1. Pattern Formation of Microorganisms
2. Dynamics of Granular Materials
3. Deformation and Fracture of Soft Materials

### Selected Publications:

1. Shaking-induced stress anisotropy in the memory effect of paste
   Kitsunezaki S, Nakahara A, Matsuo Y.
   Lucas Goehring, Nakahara A, Dutta T, Kitsunezaki S, Tarafdar S.
3. Cracking Condition of Cohesionless Porous Materials in Drying Processes
   Kitsunezaki S.
4. Bioconvection and front formation of Paramecium tetraurelia
   Kitsunezaki S, Komori R, Harumoto T.

---

### Subject of Research:

1. Structure and Formation of Deeply Bound Pionic Atoms
   Toki H, Hirenzaki S, Yamazaki T, Hayano R S.

---

### Subject of Research:

Properties of Strongly coupled plasmas strongly coupled plasmas density functional theory

### Selected Publications:

1. Multi-average ion model for hot dense plasmas derived from finite temperature density-functional theory
   Kiyokawa S.
2. Exact solution to the Coulomb wave using the linearized phase-amplitude method
   Kiyokawa S.
3. Correspondence between Phase Oscillator Network and Classical XY Model with the Same Infinite-Range Interaction in Statics
   Usui T, Kimoto T, Kyokawa S, Okada M.
4. Bioconvection and front formation of Paramecium tetraurelia
   Kitsunezaki S, Komori R, Harumoto T.
Experimental study of magnetism and metal physics

MATSUOKA Yuki / Associate Professor
matsuoka@cc.nara-wu.ac.jp

EDUCATION: 1998 Division of Physics, Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:
1. The phase stability of noble metal martensitic alloy
2. Research of the effect of muguenic acid on Soil, ESR/EPF, Fe" mineral
3. ESR measurement of pottery and potter's clay, ESR, Bizen-pottery, clay, color, Fe"'

SELECTED PUBLICATIONS:
1. Composition dependence of the phase stability in Au-Cd-Ag martensitic alloy

2. Size effect for phase stability on Au-Cd-Ag of phase boundary composition

Elementary particle physics experiments, especially CP violation,
heavy-flavored hadron spectroscopy, and particle detector development

MIYABAYASHI Kenkichi / Professor
miyabaya@cc.nara-wu.ac.jp

EDUCATION: 1994 Graduate School of Science, Nagoya University
1990 Faculty of Science, Nagoya University

ACADEMIC DEGREES: Ph.D. Nagoya University

SUBJECT OF RESEARCH:
1. Study of CP violation in B meson decays at high luminosity asymmetric-energy e+e- collider
2. Heavy-flavored hadron spectroscopy at B-factory experiment
3. Research and development of inorganic scintillator based electromagnetic calorimeter
4. Beam background monitoring for high luminosity e+e- collider

SELECTED PUBLICATIONS:
1. Precise measurement of the CP violation parameter sin2β in \( B \rightarrow K^-\rho^+ \) decays

Theoretical study for the structures and properties of hadrons

NAGAHIRO Hideko / Associate Professor
nagahiro@cc.nara-wu.ac.jp

EDUCATION: 2001 Graduate School, Doctoral Research Course in Human Culture, Nara Women's University

ACADEMIC DEGREES: Ph.D. Nara Women's University

SUBJECT OF RESEARCH:
1. Natures of hadrons (structure, mass generation, decay properties)
2. \( \eta, \eta' \) mesic nuclei and chiral symmetry

SELECTED PUBLICATIONS:
1. Structure of charmed baryons studied by pionic decays

2. Measurement of excitation spectra in the 12C(p,d) reaction near \( \eta' \) emission threshold

3. Elementarity of composite systems

4. Composite and elementary nature of a resonance in the sigma model,

Experimental research on ion-atom and ion-solid collisions

OGAWA Hidemi / Professor
ogawa@cc.nara-wu.ac.jp

EDUCATION: 1984 Graduate School of Science, Kyoto University
1979 Faculty of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:
1. Secondary electron emission from thin film by ion and neutral beam irradiation
2. Energy losses and charge exchanges of high velocity heavy ions in solid and gas targets

SELECTED PUBLICATIONS:
1. Composition dependence of the phase stability in Au-Cd-Ag martensitic alloy

2. Size effect for phase stability on Au-Cd-Ag of phase boundary composition

Experimental study of magnetism and metal physics

MATSUOKA Yuki / Associate Professor
matsuoka@cc.nara-wu.ac.jp

EDUCATION: 1998 Division of Physics, Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:
1. The phase stability of noble metal martensitic alloy
2. Research of the effect of muguenic acid on Soil, ESR/EPF, Fe" mineral
3. ESR measurement of pottery and potter's clay, ESR, Bizen-pottery, clay, color, Fe"

SELECTED PUBLICATIONS:
1. Composition dependence of the phase stability in Au-Cd-Ag martensitic alloy

2. Size effect for phase stability on Au-Cd-Ag of phase boundary composition
**SUBJECT OF RESEARCH:**
1. Observational study of structure and evolution of galaxy clusters in the universe
2. Development of high-resolution X-ray microcalorimeters

**SELECTED PUBLICATIONS:**
1. An introduction to non-Abelian discrete symmetries for particle physicists
   Ishimori H, Kobayashi T, Ohki H, Okada H, Shimizu Y, Tanimoto M,

---

**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Light composite scalar in twelve-flavor QCD on the lattice

---

**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
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5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Open String Fields as Matrices
   Kishimoto I, Masuda T, Takahashi T, Takemoto S.

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**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
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**SUBJECT OF RESEARCH:**
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**SUBJECT OF RESEARCH:**
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1. Light composite scalar in twelve-flavor QCD on the lattice

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**SUBJECT OF RESEARCH:**
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5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Open String Fields as Matrices
   Kishimoto I, Masuda T, Takahashi T, Takemoto S.

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**SUBJECT OF RESEARCH:**
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**SUBJECT OF RESEARCH:**
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   Kishimoto I, Masuda T, Takahashi T, Takemoto S.

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**SUBJECT OF RESEARCH:**
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**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
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3. Numerical Simulation of Lattice Quantum Chromodynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Open String Fields as Matrices
   Kishimoto I, Masuda T, Takahashi T, Takemoto S.

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**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Light composite scalar in twelve-flavor QCD on the lattice

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**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Open String Fields as Matrices
   Kishimoto I, Masuda T, Takahashi T, Takemoto S.

---

**SUBJECT OF RESEARCH:**
1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromodynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

**SELECTED PUBLICATIONS:**
1. Light composite scalar in twelve-flavor QCD on the lattice
Theoretical study of nonequilibrium dynamics in quantum systems, biomolecules, chemical reactions, and social systems

TSUCHIZU Masahisa / Associate Professor
tsuchiz@cc.nara-wu.ac.jp

SUBJECT OF RESEARCH:
1. Quantum Mechanics of Non-Integrable Systems
   Quantum Chaos, Quantum Entanglement, Origin of Irreversibility
2. Dynamical Process of Chemical Reaction Chaos, Transition State Theory, Time Series Analysis of Biomolecules

SELECTED PUBLICATIONS:
1. Mechanism and Experimental Observability of Global Switching Between Reactive and Nonreactive Coordinates at High Total Energies
   Teramoto H, Toda M, Takahashi M, Kono H, Komatsuzaki T.
   DOI: 10.1103/PhysRevLett.115.093003
2. Breakdown Mechanisms of Normally Hyperbolic Invariant Manifolds in terms of Unstable Periodic Orbits and Homoclinic/Heteroclinic Orbits in Hamiltonian Systems
   Teramoto H, Toda M, Komatsuzaki T.

Physics

SUBJECT OF RESEARCH:
1. Synchronization phenomena Phase oscillator networks, Kuramoto model
2. Correspondence between phase oscillator networks and the classical XY model with the same infinite-range interaction Phase transition, Critical phenomena
3. Statistical mechanical study on disordered systems and neural networks Neural networks, Spin glasses, Replica method, Learning

SELECTED PUBLICATIONS:
1. Supervised Learning of Two-Layer Perceptron under the Existence of External Noise --- Learning Curve of Boolean Functions of Two Variables in Tree-Like Architecture ---
   Uezu T, Kiyokawa S.
2. Correspondence between phase oscillator network and classical XY model with the same infinite-range interaction in statics
   Uezu T, Kimoto T, Kiyokawa S, Okada M.
3. Unlearning of Mixed States in the Hopfield Model -- Finite Loading Case --
   Ohtani H, Yoshida M, Kiyokawa S, Uezu T.

Experimental study of crystal structures and physical properties of quasicrystals and intercalated layered materials

YAMAMOTO Kazuki / Associate Professor / kazuki.yamamoto@cc.nara-wu.ac.jp

SUBJECT OF RESEARCH:
2. X-ray Study of Structure for Quasicrystals.

SELECTED PUBLICATIONS:
1. The structure of an Al–Rh–Cu decagonal quasicrystal studied by spherical aberration (Cs)-corrected scanning transmission electron microscopy
   Yubuta K, Yamamoto K, Yasuhara A, Hiraga K.
   Yubuta K, Yamamoto K, Yasuhara A, Hiraga K.

Edith sicano
Physicists

SUBJECT OF RESEARCH:
1. Theoretical Study on Quasi-One-Dimensional Organic Conductors
2. Evolution of Supernova Remnants

SELECTED PUBLICATIONS:
   Nobukawa M, Uchiyama H, Nobukawa K K, Yamauchi S, Koyama K.
2. Scale heights and equivalent widths of the iron K-shell lines in the Galactic diffuse X-ray emission
   Yamauchi S, Nobukawa K K, Nobukawa M, Uchiyama H.

SUBJECT OF RESEARCH:
2. Evolution of Supernova Remnants

SELECTED PUBLICATIONS:
1. Theoretical Study on Quasi-One-Dimensional Organic Conductors
   Tauchizumi M, Yoshihika H, Seo H.
   DOI: 10.7566/JPSJ.85.104705
2. Electronic Correlation in Carbon Nanotubes
   The Hiromi collaboration
3. The quiet intracluster medium in the core of the Perseus cluster

EDUCATION:
1991 Division of Astrophysics, Graduate School of Science, Nagoya University
1987 Department of Physics, Faculty of Science, Nagoya University

ACADEMIC DEGREES:
Ph.D. Nagoya University

Theoretical study of highly correlated low-dimensional electron systems

YOSHIOKA Hideo / Professor
h-yoshi@cc.nara-wu.ac.jp

EDUCATION:
1993 Graduate School of Science, The University of Tokyo
1988 Faculty of Science, Nagoya University

ACADEMIC DEGREES:
Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
1. Theoretical Study on Quasi-One-Dimensional Organic Conductors
2. Phase competition, solitons, and domain walls in neutral-ionic transition systems
   Tauchizumi M, Yoshihika H, Seo H.
3. Electronic Correlation in Carbon Nanotubes
   DOI: 10.7566/JPSJ.85.104705
4. Theoretical Study on Strongly Correlated One-Dimensional Electron System
3. Enhancement of charge ordering by zeeman effect in one-dimensional molecular conductors
   Yoshihika H, Seo H, Otsuka Y.
   DOI: 10.3938/jkps.63.383

SELECTED PUBLICATIONS:
1. Tomonaga-Luttinger liquid theory for metallic fulleren polymers
   Yoshihika H, Shima H, Noda Y, Ono S, Ohno K.
   DOI: 10.1103/PhysRevB.93.165431

Development of light-driven biocatalytic process

HONDA Yuki / Assistant Professor
honda@cc.nara-wu.ac.jp

EDUCATION:
2012 Graduate School of Advanced Science and Engineering, Waseda University

ACADEMIC DEGREES:
Dr.Eng. Waseda University

SUBJECT OF RESEARCH:
1. Inorganic/bio hybrid photocatalytic system for hydrogen production
2. Light-driven coenzyme regeneration system

SELECTED PUBLICATIONS:
1. Coexpression of 5-Aminolevulinic Acid Synthase Gene Facilitates Heterologous Production of Thermostable Cytochrome P450, CYP119, in Holo Form in Escherichia coli
   Honda Y, Nanawaka K, Fuji H
   DOI: 10.1002/cbic.201800331
2. Inorganic/whole-cell Biohybrid Photocatalyst for Highly Efficient Hydrogen Production from Water
   Honda Y, Watanabe M, Hagiwara H, Ida S, Ishihara T.
   DOI: 10.1016/j.apcatb.2017.04.015
3. Application to Photocatalytic H2 Production of a Whole-cell Reaction by Recombinant Escherichia coli
   Honda Y, Hagiwara H, Ida H, Ishihara T
   DOI: 10.1002/anie.201600177

Inorganic/bio hybrid photocatalytic system for hydrogen production

SUBJECT OF RESEARCH:
1. Inorganic/bio hybrid photocatalytic system for hydrogen production
2. Light-driven coenzyme regeneration system

SELECTED PUBLICATIONS:
1. Inorganic/bio hybrid photocatalytic system for hydrogen production
   Honda Y, Watanabe M, Hagiwara H, Ida S, Ishihara T.
   DOI: 10.1016/j.apcatb.2017.04.015
2. Inorganic/whole-cell Biohybrid Photocatalyst for Highly Efficient Hydrogen Production from Water
   Honda Y, Watanabe M, Hagiwara H, Ida S, Ishihara T.
   DOI: 10.1016/j.apcatb.2017.04.015
3. Application to Photocatalytic H2 Production of a Whole-cell Reaction by Recombinant Escherichia coli
   Honda Y, Hagiwara H, Ida H, Ishihara T
   DOI: 10.1002/anie.201600177
Research on the physical properties of nano-sized metal complexes in a solid state

KAJIWARA Takashi / Professor
kajiwara@cc.nara-wu.ac.jp

EDUCATION: 2000 Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:
Magnetochromy of lanthanide-based metal complexes

SELECTED PUBLICATIONS:
1. Light Lanthanide Complexes with Crown Ether and Its Aza Derivative Which Show Slow Magnetic Relaxation Behaviors
   Wada H, Ooka S, Yamamura T, Kajiwara T.
   DOI: 10.1021/acs.inorgchem.6b01764

2. Slow Magnetic Relaxation of Lanthanide(III) Complexes with a Helical Ligand
   Wada H, Ooka S, Iwasawa D, Hasegawa M, Kajiwara T.
   DOI: 10.3390/magnetochemistry2040043

3. Structural switching from paramagnetic to single-molecule magnet behaviour of LnZn3 trinuclear complexes
   Poh Ling Then, Takehara C, Kataoka Y, Nakano M, Yamamura T, Kajiwara T.
   DOI: 10.1039/C5DT02965A

Design and synthesis of high-performance transition metal complex catalysts and development of novel environmentally friendly synthetic organic reactions

KATAOKA Yasutaka / Professor / kataoka@cc.nara-wu.ac.jp

EDUCATION: 1992 Graduate School of Engineering, Kyoto University
1987 Faculty of Engineering, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:
1. Synthetic Organic Chemistry
2. Organometallic Chemistry

SELECTED PUBLICATIONS:
1. Palladium-catalyzed Aerobic Synthesis of Terminal Acetals from Vinylarenes Assisted by pi-Acceptor Ligands

2. Maleimide-assisted Anti-Markovnikov Wacker-type Oxidation of Vinylarenes Using Molecular Oxygen as a Terminal Oxidant
   Nakaoka S, Murakami Y, Kataoka Y, Ura Y.

3. Oxygenation of a Benzyl Ligand in SNS-Palladium Complexes with O2. Acceleration by Anions or Brønsted Acids
   Shimokawa R, Kawada Y, Hayashi M, Kataoka Y, Ura Y.
   DOI:10.1039/C5DT02965A

Research on molecular chirality and organic synthesis using organometallic reagents

MATSUMOTO Arimasa / Assistant Professor
amatsumoto@cc.nara-wu.ac.jp

EDUCATION: 2012 Graduate School of Science, The University of Tokyo
2007 Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
1. Synthetic Organic Chemistry, Chirality
2. Organometallic Chemistry, Chirality

SELECTED PUBLICATIONS:
1. Achiral Inorganic Gypsum Acts as an Origin of Chirality through Its Enantiotopic Surface in Conjunction with Asymmetric Autocatalysis
   Matsumoto A, Kaimori Y, Uchida M, Omori H, Kawasaki T, Soai K.
   DOI:10.1002/anie.201608955

2. Asymmetric Induction by Nitrogen 14N/15N Isotopomer in Conjunction with Asymmetric Autocatalysis
   Matsumoto A, Abe T, Hara A, Tobita T, Sasagawa T, Kawasaki T, Soai K.
   DOI: 10.1002/anie.201508036

Classical and quantum molecular simulations aiming at a priori design and investigation of physical properties of molecular ensembles and condensed matter

KINUGAWA Kenichi / Professor / kinugawa@cc.nara-wu.ac.jp

EDUCATION: 1988 Graduate School of Engineering, Kyoto University
1986 Faculty of Engineering, Kyoto University

ACADEMIC DEGREES: Ph.D. University of Kyoto

SUBJECT OF RESEARCH:
Classical and quantum molecular simulations aiming at a priori design and investigation of physical properties of molecular ensembles and condensed matter

SELECTED PUBLICATIONS:
1. Path integral centroid molecular dynamics simulation of para-hydrogen sandwiched by graphene sheets
   Minamino Y, Kinugawa K.

2. Transport coefficients of normal liquid helium-4 calculated by path integral centroid molecular dynamics simulation
   Shimokawa R, Kawada Y, Hayashi M, Kataoka Y, Ura Y.
Synthetic studies of small molecules with bioactivity and analyses of their function

MIKATA Yuji / Professor
mikata@cc.nara-wu.ac.jp
EDUCATION: 1993 Graduate School of Science, Kyoto University
1988 Faculty of Science, Kobe University
ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:
1. Fluorescent Sensors for Zinc, Cadmium, Mercury, Pyrophosphate
2. Enzyme models, Coenzyme models
3. Carbohydrate-Based Metal Complexes

SELECTED PUBLICATIONS:
1. Y. Mikata, R. Ohnishi, R. Nishijima, A. Matsumoto, and H. Konno
Pyrophosphate-Induced Intramolecular Excimer Formation in Dinuclear Zinc(II) Complexes with Tetrakisquinoline Ligands

Development of new functions and reactions based on organometallic clusters and synthesis of supramolecules comprised of metal clusters

NAKAJIMA Takayuki / Associate Professor
t.nakajima@cc.nara-wu.ac.jp
EDUCATION: 1998 Graduate School of Science and Engineering, Doctor later, Waseda University
ACADEMIC DEGREES: Ph.D. Waseda University

SUBJECT OF RESEARCH:
Development of new functions and reactions based on organometallic clusters supported by multidentate ligands and synthesis of supramolecules comprised of metal clusters

SELECTED PUBLICATIONS:
Fluorescent Cd²⁺ Sensors

Fine Synthesis and Functions of Multinuclear Transition–Metal Complexes

NAKAMAE Kanako / Assistant Professor
nakamae@cc.nara-wu.ac.jp
EDUCATION: 2015 Graduate School of Humanities and Sciences, Nara Women’s University
ACADEMIC DEGREES: Ph.D. Nara Women’s University

SUBJECT OF RESEARCH:
Development of New Materials Based on Fine Syntheses of Multinuclear Transition–Metal Complexes

SELECTED PUBLICATIONS:
1. Self-Alignment of Low-Valent Octanuclear Palladium Atoms
Nakamae K, Takemura Y, Kure B, Nakajima T, Kitagawa Y, Tanase T.
DOI: 10.1002/anie.201409511

Development of mass spectrometric methods for studies on the structure, function, and interaction of proteins

NAKAZAWA Takashi / Professor
l.nakazawa@cc.nara-wu.ac.jp
EDUCATION: 1992 Graduate School of Science, Osaka University
1977 Faculty of Science, Osaka University
ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
1. Development of the method for identifying animals species based on amino acid sequencing of collagen in archaeological samples using mass spectrometry
2. Analysis of protein functions using histidine residues as micro-environmental probes

SELECTED PUBLICATIONS:
1. X-ray snapshots of a pyridoxal enzyme: a catalytic mechanism involving concerted [1,5]-hydrogen sigmatropy in methionine γ-lyase
Scientific Reports 7, 4874(2017)
DOI: 10.1038/s41598-017-05032-6
Computational physical chemistry: Quantum dynamics of molecular systems

OHTA Yasuhiro / Associate Professor

ohta@cc.nara-wu.ac.jp

EDUCATION: 2001 Kanazawa University

ACADEMIC DEGREES: Ph.D. Kanazawa University

SUBJECT OF RESEARCH:
Quantum chemical molecular dynamics simulation of the self-organization reaction of nano materials

SELECTED PUBLICATIONS:
1. Possible Mechanism of BN Fullerene Formation from a Boron Cluster: Density-Functional Tight-Binding Molecular Dynamics Simulations
   DOI: 10.1002/jcc.24287
2. Quantum Chemical Molecular Dynamics Simulation of Single-Walled Carbon Nanotube Cap Nucleation on an Iron Particle
   Ohta Y, Okamoto Y, Alistar J. Page, Stephan Irle, Morokuma K.
   ACS NANO, 3: 3413-3420 (2009)

Design and photofunctionalization of metalloproteins

TAKASHIMA Hiroshi / Associate Professor

hiroshi@cc.nara-wu.ac.jp

EDUCATION: 2000 Graduate School of Engineering, Kyushu University
1997 Graduate School of Engineering, Doshisha University

ACADEMIC DEGREES: Ph. D. Kyushu University

SUBJECT OF RESEARCH:
Photoinduced electron transfer reactions in the metalloprotein containing a photofunctional molecule.

SELECTED PUBLICATIONS:
1. Photoinduced electron-transfer reactions of tris(2,2'-bipyridine)ruthenium(II)-based carbonic anhydrase inhibitors tethering plural binding sites
   Suwa M, Imanura N, Awan P, Nakata E, Takashima H.
   DOI: 10.1002/poc.3848
2. Emission property and DFT calculation for the "MLCT luminescence of Ru(bpy)2(L)2+" complex
   Yoshikawa N, Kimura H, Yamabe S, Kanohsa N, Incue T, Takashima H.
   DOI: 10.1016/j.molstruc.2016.03.069

Organometallic, coordination, and bioinorganic chemistry based on multinuclear metal centers

TANASE Tomoaki / Professor
tanase@cc.nara-wu.ac.jp

EDUCATION: 1988 Synthetic Chemistry, Graduate School of Engineering, The University of Tokyo
1983 Faculty of Engineering, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
1. Extended Metal Atom Chains Supported by Linear Polyphosphines
   Tanase T, Morita K, Otaki R, Yamamoto K, Kaneko Y, Nakamae K, Kure B, Nakajima T.
2. Structurally Constrained Organometallic Clusters by Using Multidentate Ligands
   Tanabe M, Yumoto R, Yamada T, Fukuta T, Hoshino T, Osakada K, Tanase T.
3. Self-Alignment of Low-Valent Octanuclear Palladium Tetrapalladium Units Affording Pd8 Chains Supported by Homochiral Tetraphosphines
   Kilagaya Y, Tanase T.

Unimolecular Dissociation and Ion-Molecule Reaction Dynamics in the Gas Phase by Combining Mass Spectrometric Studies with Theoretical Methods, and Development of Software for Fungal Species Identification

TAKEUCHI Takeki / Associate Professor / takeuchi_t@cc.nara-wu.ac.jp

EDUCATION: 1985 Graduate School of Humanities and Sciences, Nara Women’s University
1982 Graduate School of Science, Nara Women’s University

ACADEMIC DEGREES: Ph.D. Nara Women's University

SUBJECT OF RESEARCH:
1. Theoretical Study of the Fragmentation Mechanism in Mass Spectrometry: Energies and Dynamics
   Yamagaki T, Takeki M, Watanabe T, Sugihara K, Takeuchi T.
2. Development of Fungal Odor Detection Technique and Software for Identifying Fungal Species by Ion Mobility and Mass Spectrometric Analysis of Microbial Volatile Organic Compounds (MVOCs) for Conservation of Cultural Properties
3. Influence of Metal-Peptide Complexation on Fragmentation and Inter-Fragment Hydrogen Migration in Electron Transfer Dissociation Acid Isomers in Matrix-assisted Laser Desorption/Ionization Mass Spectrometry with Density Functional Theory Calculations
   Asakawa D, Takeki T, Yamashita A, Wada Y.
Research on the synthesis, reactivity, and catalysis of novel transition metal complexes toward a sustainable future
URA Yasuyuki / Associate Professor / ura@cc.nara-wu.ac.jp

EDUCATION: 2001 Graduate School of Pharmaceutical Sciences, Hokkaido University
1997 Faculty of Pharmaceutical Sciences, Hokkaido University

ACADEMIC DEGREES: Ph. D. Hokkaido University

SUBJECT OF RESEARCH:
1. Development of environmental load-reducing organic synthetic reactions using transition metal catalysts
2. Synthesis, reactivity, and catalysis of novel transition metal complexes

SELECTED PUBLICATIONS:
1. Palladium-catalyzed Aerobic Synthesis of Terminal Acetals from Vinylarenes Assisted by \( p \)-Acceptor Ligands
DOI: 10.1039/C6DT02948E

2. Oxygenation of a Benzyl Ligand in SNS-Palladium Complexes with \( O_2 \): Acceleration by Anions or Brønsted Acids
Shimokawa R, Kawada Y, Hayashi M, Kataoka Y, Ura Y.
DOI: 10.1002/cctc.201601517


Colloid and surface chemistry: Research on properties and nanostructure of molecular assemblies
YADA Shiho / Assistant Professor
qas_yada@cc.nara-wu.ac.jp

EDUCATION: 2019 Graduate School of Humanities and Sciences, Nara Women’s University

ACADEMIC DEGREES: Ph. D. Nara Women’s University

SUBJECT OF RESEARCH:
1. Structural analysis of micelle, liquid crystal and ionic liquid using small angle X-ray and neutron scattering techniques
2. Evaluation of properties and structural analysis of foams formed by surfactants
3. Structural analysis of amphiphilic compounds adsorbed at air/water interface

SELECTED PUBLICATIONS:
1. Emulsification, Solubilization, and Detergency Behaviors of Homogeneous Polyoxypropylene-Polyoxyethylene Alkyl Ether Type Nonionic Surfactants
Yada S, Matsuoka K, Kanasaki Y, Gotoh K, Yoshimura T.
DOI: 10.1021/acs.langmuir.7b00104

2. Adsorption Dynamics of Homogeneous Polyoxypropylene-Polyoxyethylene Alkyl Ether Type Nonionic Surfactants at Air/Water Interface
Yada S, Suzuki T, Hashimoto S, Yoshimura T.
DOI: 10.1016/j.molliq.2018.01.150

3. Adsorption and Aggregation Properties of Homogeneous Polyoxypropylene-Polyoxyethylene Alkyl Ether Type Nonionic Surfactants
Yada S, Suzuki T, Hashimoto S, Yoshimura T.
DOI: 10.1021/acs.langmuir.7b00104


Physical chemistry of soft matter: Surfactants, amphiphilic polymers, ionic liquid, and metal nanoparticles
YOSHIMURA Tomokazu / Professor
yoshimura@cc.nara-wu.ac.jp

EDUCATION: 2001 Graduate School of Science and Technology, Kumamoto University

ACADEMIC DEGREES: Ph.D. Kumamoto University

SUBJECT OF RESEARCH:
1. Design and Synthesis of Novel Surfactants and Amphiphilic Polymers with High Functions
DOI: 10.1016/j.colsurfa.2016.04.032

3. Maleimide-assisted anti-Markovnikov Wacker-type oxidation of vinylarenes using molecular oxygen as a terminal oxidant
Nakaoka S, Murakami Y, Kataoka Y, Ura Y.
DOI: 10.1039/C5CC08746D

4. Study on Liquid/Liquid Interface and Emulsion

SELECTED PUBLICATIONS:
1. Adsorption and Aggregation Properties of Homogeneous Polyoxypropylene-Polyoxyethylene Alkyl Ether Type Nonionic Surfactants
Yada S, Suzuki T, Hashimoto S, Yoshimura T.
DOI: 10.1021/acs.langmuir.7b00104

2. Aggregate Formation of Glycyrrhizic Acid
Matsuoka K, Miyajima R, Ishida Y, Karasawa S, Yoshimura T.
DOI: 10.1016/j.colsurfa.2016.04.032

3. Single-alkyl and multi-alkyl chain-containing amphiphilic oligomers with several sugar side chains: solution properties and nanostructural analysis of aggregates by SANS
Yoshimura T, Nakatani Y, Matsuoka K, Akutsu K, Iwase H.
DOI: 10.1007/s00396-017-4063-3
SUBJECT OF RESEARCH:
1. Predator-prey interaction in ciliates
2. Mechanism of induction of conjugation in ciliates
3. Stop codon recognition and eRF1s in ciliates

SELECTED PUBLICATIONS:
1. Rapid response to nutrient depletion on the expression of mating pheromone, gamone 1, in Blepharisma japonicum
2. Two possible barriers blocking conjugation between different megakaryotypes of Blepharisma

SUBJECT OF RESEARCH:
1. Plant reproduction
2. Plant-animal interactions
3. Resource allocation

SELECTED PUBLICATIONS:
1. Defensive chemicals of neighboring plants limit visits of herbivorous insects: associational resistance within a plant population.

SUBJECT OF RESEARCH:
1. Plant reproduction
2. Plant-animal interactions
3. Resource allocation

SELECTED PUBLICATIONS:
1. Heating effect by perianth retention on developing achenes and implications for seed production in the alpine herb Ranunculus glacialis

SUBJECT OF RESEARCH:
1. Chromosome rearrangement in Fungi chromosome rearrangement Electrophoretic Karyotype Candida albicans
2. Ploidy shift in Fungi Candida albicans Ploidy Loss of heterozygosity
3. Dimorphism in fungi Dimorphism Subtractive DNA cloning Candida tropicalis

SELECTED PUBLICATIONS:
1. The loss of parts of chromosome 7 followed by the insertion of URA cassette into RB2 on MRS in Candida albicans strain CAI-4
2. Chromosome translocation induced by the insertion of the URA blaster into the major repeat sequence (MRS) in Candida albicans
3. Pseudohyphal growth induced by exposure of yeast cells to subinhibitory levels of antifungal azoles in Candida tropicalis
   Plant Morphology, 13(1): 2-10 (2001)

SUBJECT OF RESEARCH:
1. Plant reproduction
2. Plant-animal interactions
3. Resource allocation

SELECTED PUBLICATIONS:
1. Induction of intranuclear membranes by overproduction of Opi1p and Scs2p, regulators for yeast phospholipid biosynthesis, suggests a mechanism for Opi1p nuclear translocation
2. Colony sheath formation is accompanied by shell formation and release in the green alga Botryococcus braunii (race B)
3. Coordinated regulation by two VPS9 domain-containing guanine nucleotide exchange factors in small GTPase Rab5 signaling pathways in fission yeast.
SUBJECT OF RESEARCH:
1. Studies for biodiversity-environment interactions in freshwater ecosystems
2. Conservation and restoration in river ecosystems
3. Biodiversity conservation in SATOYAMA ecosystems

SELECTED PUBLICATIONS:
1. Distribution and drift dispersal dynamics of a caddisfly grazer in response to resource abundance and its ontogeny.
2. A cross-system meta-analysis reveals coupled predation effects on prey biomass and diversity.
3. Stream grazers determine their crawling direction on the basis of chemical and particulate microalgal cues.

KATANO Izumi / Associate Professor
katano@cc.nara-wu.ac.jp

EDUCATION:
2004 Graduate school of Human Culture, Nara Women's University
1998 Faculty of Science, Nara Women's University

ACADEMIC DEGREES: Ph.D. Nara Women's University

Physiological analysis of non-visual photoreception in lower vertebrates

SUBJECT OF RESEARCH:
Kawano-Yamashita Emi / Assistant Professor
kawano@cc.nara-wu.ac.jp

Kawano-Yamashita Emi / Assistant Professor
kawano@cc.nara-wu.ac.jp

Edication:
2006 Graduate School of Humanities and Sciences, Nara Women's University
2001 Faculty of Science, Nara Women's University

ACADEMIC DEGREES: Ph.D. Nara Women's University

SUBJECT OF RESEARCH:
Physiological analysis of non-visual photoreception in lower vertebrates

SELECTED PUBLICATIONS:
1. Activation of transducin by bistable pigment parapinopsin in the pineal organ of lower vertebrates.
2. The evolution and diversity of pineal and parapineal photopigments.
3. The evolution and diversity of pineal and parapineal photopigments.

SAEKI Kazuhiko / Professor
ksaeke@cc.nara-wu.ac.jp

EDUCATION:
1986 Course for Biological Chemistry, Graduate School of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
Plant-microbe interaction, symbiotic and non-symbiotic nitrogen fixation

SELECTED PUBLICATIONS:
1. Hijacking of leguminous nodulation signaling by the rhizobial type III secretion system
2. Commonalities and differences among symbiosis islands of three Mesorhizobium loti strains

Evolution of developmental complexities in volvocine algae

SUBJECT OF RESEARCH:
NISHII Ichiro / Associate Professor
ichiron@cc.nara-wu.ac.jp

EDUCATION:
1999 Physiology, Graduate School of Science, Osaka University
1993 Department of Biology, Faculty of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
Evolution of developmental complexities in volvocine algae

SELECTED PUBLICATIONS:
1. Colony sheath formation is accompanied by shell formation and release in the green alga Botryococcus braunii (race B).
2. Genomic analysis of organismal complexity in the multicellular green alga Volvox carteri.
3. Volvox: Simple steps to developmental complexity?

NISHII Ichiro / Associate Professor
ichiron@cc.nara-wu.ac.jp

EDUCATION:
1999 Physiology, Graduate School of Science, Osaka University
1993 Department of Biology, Faculty of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
Genome biology of nitrogen-fixing symbiosis; rhizobium plant-microbe interaction symbiosis

SELECTED PUBLICATIONS:
1. Rhizobial measures to evade host defense strategies and endogenous threats to persistent symbiotic nitrogen fixation: a focus on two legume-rhizobium model systems
2. Commonalities and differences among symbiosis islands of three Mesorhizobium loti strains

SAEKI Kazuhiko / Professor
ksaeke@cc.nara-wu.ac.jp

EDUCATION:
1986 Course for Biological Chemistry, Graduate School of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

SUBJECT OF RESEARCH:
Plant-microbe interaction, symbiotic and non-symbiotic nitrogen fixation

SELECTED PUBLICATIONS:
1. Hijacking of leguminous nodulation signaling by the rhizobial type III secretion system
2. Commonalities and differences among symbiosis islands of three Mesorhizobium loti strains
Physiological and Biochemical studies on plant organelles, photosynthesis, and allelopathy

SAKAI Atsushi / Professor
sakai@cc.nara-wu.ac.jp

EDUCATION: 1991 Division of Plant Sciences, Graduate School of Science, The University of Tokyo
1989 Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
1. Allelopathy
2. Hyper Sensitive Response
3. Function of Organelle Genomes
4. Photosynthesis and Respiration in Plants

SELECTED PUBLICATIONS:
1. Monoterpenes of Salvia leucophylla.
   Sakai A, Yoshimura H.
   Current Bioactive Compounds, 8: 90-100 (2012)

2. Cytological studies on proliferation, differentiation, and death of BY-2 cultured tobacco cells
   Sakai A, Takusagawa M, Nio A, Sawai Y.

3. Effects of chloroplast dysfunction on mitochondria: white sectors in variegated leaves have higher mitochondrial DNA levels and lower dark respiration rates than green sectors.
   Noguchi T, et al.
   Protoplasma, 249: 805-817 (2011)

4. Correlation of phyllotaxis and localization of Pin1 auxin transporter in shoot apical meristems
   Sakaguchi S.

5. Posture control of zygomorphic flowers by torsion of flower stalks in response to gravity

6. Role for calcium in polarized growth in yeasts
   Sakai A, Takusagawa M, Nio A, Sawai Y.
   Current Bioactive Compounds, 8: 90-100 (2012)

Environmental regulation of plant growth and development

SAITO Hiroaki / Associate Professor
scarab@cc.nara-wu.ac.jp

EDUCATION: 1987 Division of Biology, Graduate School of Science, Tohoku University
1982 Zoological Institute, Faculty of Science, Hokkaido University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:
1. Light regulation of aquaporins and water transport in Arabidopsis thaliana.
   Iwamoto M, Horikawa C, Shikata M, Wasaka N, Kato T, Sato H.

2. Environmental stresses and plant growth
   Ishikawa H, Sato-Nara K, Takase T, Suzuki H.

3. Roles of pre-mRNA splicing and microRNAs in plant development
   Uenishi Y, Nakabayashi Y, Tsuchihira A, Takusagawa M, Hashimoto K, Maeshima M, Sato-Nara K.
   Ecological Research, 29: 455-462 (2014)

SELECTED PUBLICATIONS:
1. Diurnal changes in shoot water dynamics are synchronized with hypocotyl elongation in Arabidopsis thaliana.
   Ishikawa H, Sato-Nara K, Takase T, Suzaki H.
   Plant Signaling & Behavior, 8(3) eLocation ID: e23 (2013)

2. Stinging hairs on the Japanese nettle Urtica thunbergiana have a defensive function against mammalian but not insect herbivores
   Yukari S, Yamamoto A, Oishi M, Sato H.

3. Early leaf abscission has little effect on larval mortality of Ectoedemia cerviparaisca (Lepidoptera, Nepticulidae) associated with Quercusgilva
   Sato H.
   Ecosphere, 8: e01568, 2017

4. Behavioral and community ecology of dung beetles

5. Interactions between animals and plants
   Kohyama T, Horikawa C, Kawai S, Shikata M, Kato T and Sato H.

6. Ecological and taxonomic studies of leafminers
   Sato H.

7. Ecological and evolutionary studies on populations and communities
   Sato-NARA Kumi / Associate Professor
kumisn@cc.nara-wu.ac.jp

EDUCATION: 1997 Division of Environment Conservation, Graduate School of Environmental Science, Hokkaido University
1987 Division of Environment Conservation, Graduate School of Environmental Science, Hokkaido University

ACADEMIC DEGREES: Ph.D. Hokkaido University

SUBJECT OF RESEARCH:
1. Ecological and taxonomic studies of leafminers
   Iwamoto M, Horikawa C, Shikata M, Wasaka N., Kato T, Sato H.

2. Interactions between animals and plants
   Kohyama T, Horikawa C, Kawai S, Shikata M, Wasaka N., Kato T and Sato H.

3. Behavioral and community ecology of dung beetles
   Sato H.

SELECTED PUBLICATIONS:
1. Diurnal changes in shoot water dynamics are synchronized with hypocotyl elongation in Arabidopsis thaliana.
   Ishikawa H, Sato-Nara K, Takase T, Suzaki H.
   Plant Signaling & Behavior, 8(3) eLocation ID: e23 (2013)

2. Stinging hairs on the Japanese nettle Urtica thunbergiana have a defensive function against mammalian but not insect herbivores
   Yukari S, Yamamoto A, Oishi M, Sato H.

3. Early leaf abscission has little effect on larval mortality of Ectoedemia cerviparaisca (Lepidoptera, Nepticulidae) associated with Quercusgilva
   Sato H.
   Ecosphere, 8: e01568, 2017

4. Behavioral and community ecology of dung beetles
   Iwamoto M, Horikawa C, Kawai S, Shikata M, Wasaka N., Kato T and Sato H.

5. Interactions between animals and plants
   Kohyama T, Horikawa C, Kawai S, Shikata M, Wasaka N., Kato T and Sato H.
Studies on cell-cell interaction and the molecular mechanism of sexual reproduction in ciliates
SUGIURA Mayumi / Associate Professor / msugi@cc.nara-wu.ac.jp

EDUCATION: 2003 Graduate School of Human Culture, Nara Women's University
1998 Faculty of Science, Nara Women's University

ACADEMIC DEGREES: Ph.D. Nara Women's University

SUBJECT OF RESEARCH:
1. Molecular mechanism of induction of sexual reproduction in the ciliates
2. Sexual maturation and mating-type determination in the ciliate Blepharisma

SELECTED PUBLICATIONS:
1. A single amino acid residue regulates the substrate affinity and specificity of indoleamine 2,3-dioxygenase.

Physiological and histological studies on photoneuroendocrine organ
TAMOTSU Satoshi / Professor
tamotsu@cc.nara-wu.ac.jp

EDUCATION: 1986 Graduate School of Medicine, Hamamatsu University School of Medicine
1982 Graduate School of Science, Okayama University

ACADEMIC DEGREES: Ph.D. Hamamatsu University

SUBJECT OF RESEARCH:
1. Function and neural network of extraocular photoreceptive organ, pineal organ and deep-brain photoreceptor, in the vertebrate
2. Photosensory organs of deep-sea fishes
3. Neuroethological study for the sensory organ of the invertebrates, insects and echinoderms

SELECTED PUBLICATIONS:
1. The protein phosphatase 6 catalytic subunit
2. Roles of PICALM in mouse development and diseases
Shima H, Watanabe T. Human Molecular Genetics, 25,3988-3997 (2016)
3. Mice doubly-deficient in the Arf GAPs SMAP1 and SMAP2 exhibit embryonic lethality.

FUNCTIONAL ANALYSIS OF SMALL G PROTEIN IN MEMBRANE TRAFFIC, ROLES OF TRANSCRIPTION FACTORS AND CHRATHRIN ASSEMBLY PROTEIN IN LEUKEMOGENESIS
WATANABE Toshio / Professor / toshiwatana@cc.nara-wu.ac.jp

EDUCATION: 1987 Graduate School of Science, The University of Tokyo
1982 Biochemistry and Biophysics, Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

SUBJECT OF RESEARCH:
1. Roles of small G protein Arfs and their GAP in development
2. Roles of PICALM in mouse development and diseases
3. Roles of organelle during mouse development

SELECTED PUBLICATIONS:
1. A knockout mouse model reveals a critical role of AF10-dependent H3K79 methylation in midfacial development.
2. Partial loss of CALM function affects gamma-secretase-mediated Aβ42 production and amyloid deposition in vivo.
3. Co-culturing of follicles with interstitial cells in collagen gel reproduce follicle development accompanied with theca cell layer formation.

MORPHOGENESIS AND FUNCTIONS OF MAMMALIAN REPRODUCTIVE ORGANS
YASUDA Keiko / Professor
ponko@cc.nara-wu.ac.jp

EDUCATION: 1982 Graduate School of Science, Nara Women's University
1980 Faculty of Science, Nara Women's University

ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:
1. Morphogenesis and functions of mammalian reproductive organs
2. Theca cell layer formation in mouse ovarian follicle culture in vitro.

SELECTED PUBLICATIONS:
1. The protein phosphatase 6 catalytic subunit (Rpp6C) is indispensable for proper post-implantation embryogenesis.
2. Partial loss of CALM function affects gamma-secretase-mediated Aβ42 production and amyloid deposition in vivo.
3. Co-culturing of follicles with interstitial cells in collagen gel reproduce follicle development accompanied with theca cell layer formation.
SUBJECT OF RESEARCH:

1. Molecular phylogenetic study on the genus Blastocystis.
2. Molecular epidemiological research on human and animal Blastocystis infections.

SELECTED PUBLICATIONS:

1. Blastocystis phylogeny among various isolates from humans to insects.
2. Molecular survey of Blastocystis sp. from humans and associated animals in an Indonesian community with poor hygiene.
3. Genetic Diversity of Blastocystis in livestock and zoo animals.
4. Blastocystis: Pathogen or Passenger?

Phylogeny, classification and ultrastructure of protists

YOSHIKAWA Hisao / Associate Professor
h.yoshikawa@cc.nara-wu.ac.jp

EDUCATION: 1986 Graduate School of Medicine, Kyoto Prefectural University of Medicine 1982 Biology, Graduate School of Science and Technology, Konan University

ACADEMIC DEGREES: Ph.D. Kyoto Prefectural University of Medicine

SUBJECT OF RESEARCH:

1. Ecological studies on aquatic invertebrates
2. Management of aquatic invertebrate pests

SELECTED PUBLICATIONS:

1. Roles of the seasonal dynamics of ecosystem components in fluctuating indirect interactions on a rocky shore
2. Variation in the sex ratio of apple snails (Pomacea spp.) in their native range
3. Plastic sexual expression in the androdioecious barnacle Octolasmis warwickii (Cirripedia: Pedunculata)

Ecological studies on freshwater and marine animals

YUSA Yoichi / Professor
yusa@cc.nara-wu.ac.jp

EDUCATION: 1995 Zoology, Graduate School of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:

1. Analysis of atmospheric chemical and physical processes utilizing satellite measurements
2. Study of physical and chemical processes of atmospheric minor species
3. Remote sensing of atmospheric minor species

SELECTED PUBLICATIONS:

1. Observation of ozone enhancement in the lower troposphere over East Asia from a space-borne ultraviolet spectrometer
2. Methane concentrations over Monsoon Asia as observed by SCIAMACHY: Signals of methane emission from rice cultivation,
3. Development of a cloud detection method from whole-sky color images
4. Relationship between trace gases and aerosols from biomass burning in Southeast Asia using satellite and emission data

KUJI Makoto / Associate Professor
makato@ics.nara-wu.ac.jp

EDUCATION: 1993 Geophysics, Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:

1. Remote sensing of cloud, aerosol, and water vapor
2. Atmospheric radiation and energy budget
3. Development of a cloud detection method from whole-sky color images

SELECTED PUBLICATIONS:

1. Cloud fractions estimated from shipboard whole-sky camera and ceilometer observations
2. Characteristics of aerosol properties of haze and yellow sand examined from SKYNET measurements over East China Sea

Studies on the atmospheric environment with analyses of meteorological data

ACADEMIC DEGREES: ACADEMIC DEGREES: ACADEMIC DEGREES: ACADEMIC DEGREES:

Phylogeny, classification and ultrastructure of protists

YOSHIKAWA Hisao / Associate Professor
h.yoshikawa@cc.nara-wu.ac.jp

EDUCATION: 1986 Graduate School of Medicine, Kyoto Prefectural University of Medicine 1982 Biology, Graduate School of Science and Technology, Konan University

ACADEMIC DEGREES: Ph.D. Kyoto Prefectural University of Medicine

SUBJECT OF RESEARCH:

1. Ecological studies on aquatic invertebrates
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SELECTED PUBLICATIONS:

1. Roles of the seasonal dynamics of ecosystem components in fluctuating indirect interactions on a rocky shore
2. Variation in the sex ratio of apple snails (Pomacea spp.) in their native range
3. Plastic sexual expression in the androdioecious barnacle Octolasmis warwickii (Cirripedia: Pedunculata)

Ecological studies on freshwater and marine animals

YUSA Yoichi / Professor
yusa@cc.nara-wu.ac.jp

EDUCATION: 1995 Zoology, Graduate School of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

SUBJECT OF RESEARCH:

1. Analysis of atmospheric chemical and physical processes utilizing satellite measurements
2. Study of physical and chemical processes of atmospheric minor species
3. Remote sensing of atmospheric minor species

SELECTED PUBLICATIONS:

1. Observation of ozone enhancement in the lower troposphere over East Asia from a space-borne ultraviolet spectrometer
2. Methane concentrations over Monsoon Asia as observed by SCIAMACHY: Signals of methane emission from rice cultivation,
3. Development of a cloud detection method from whole-sky color images
4. Relationship between trace gases and aerosols from biomass burning in Southeast Asia using satellite and emission data

KUJI Makoto / Associate Professor
makato@ics.nara-wu.ac.jp

EDUCATION: 1993 Geophysics, Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

SUBJECT OF RESEARCH:

1. Remote sensing of cloud, aerosol, and water vapor
2. Atmospheric radiation and energy budget
3. Development of a cloud detection method from whole-sky color images

SELECTED PUBLICATIONS:

1. Cloud fractions estimated from shipboard whole-sky camera and ceilometer observations
2. Characteristics of aerosol properties of haze and yellow sand examined from SKYNET measurements over East China Sea
### Environmental Sciences

#### MURAMATSU Kanako / Professor / muramatu@ics.nara-wu.ac.jp

**EDUCATION:** 1993 Graduate school, Human Life and Environmental Science Course, Nara Women’s University.

1989 Physics, Graduate school of Science, Nara Women’s University

**ACADEMIC DEGREES:** Ph.D. Nara Women’s University

**SUBJECT OF RESEARCH:**
- Environmental Science, Remote Sensing, Vegetation change detection, Estimation of Gross Primary Production, Land Cover

**SELECTED PUBLICATIONS:**
1. Determination of parameters for shrubs in the global gross primary production capacity estimation algorithm
   Mineshita Y, Muramatsu K, Ochiai F, Soyama N, Daigo M, Tadono T.J.

2. Determination of bamboo distribution in Nara and southern Kyoto prefectures using multitemporal ALOS/AVNIR-2 data.
   Hanaki N, Muramatsu K, Ochiai F, Soyama N, Daigo M.

3. Algorithm developing of gross primary production from it’s capacity and a canopy conductance index using flux and global observing satellite data.
   Muramatsu K, Funumi S, Daigo M.

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#### NOGUCHI Katsuyuki / Assistant Professor / nogu@ics.nara-wu.ac.jp

**EDUCATION:** 2004 Division of Earth and Planetary Science, Graduate School of Science, The University of Tokyo

2000 Graduate School of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

**SUBJECT OF RESEARCH:**
- Atmospheric Science
- Mathematical approaches to environmental risk assessment and modeling microbial biogeochemistry

**SELECTED PUBLICATIONS:**
1. Role of stationary and transient waves in CO₂ supersaturation during northern winter in the Martian atmosphere revealed by MGS radio occultation measurements
   Noguchi K, et al.

2. Estimation of changes in the composition of the Martian atmosphere caused by CO₂ condensation from GRS Ar measurements and its application to the redetermination of MGS radio occultation measurements
   Noguchi K, Ikeda S, Kuroda T, Tellmann S, Pätzold M.
   DOI: 10.1002/2014JE004629

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#### SETO Mayumi / Assistant Professor / seto@ics.nara-wu.ac.jp

**EDUCATION:** 2008 Division of Earth and Planetary Sciences, Graduate School of Sciences, Kyushu University

**ACADEMIC DEGREES:** Ph.D. Kyushu University

**SUBJECT OF RESEARCH:**
1. Mathematical model of lateral asymmetry ploymorphisms in fish
2. Dimension spectra of fractals

**SELECTED PUBLICATIONS:**
1. Laterality is universal among fishes but increasingly cryptic among derived groups
   Hori M, Nakajima M, Hata H, Yasugi M, Takahashi S, Horii M.

2. Measuring and evaluating morphological asymmetry in fish: distinct lateral dimorphism in the jaws of scale-eating cichlids
   Hata H, Yasugi M, Takeuchi Y, Takahashi S, Horii M.
   Ecology and Evolution, 3: 4641-4647 (2013)

3. Sexual systems and dwarf males in barnacles: Integrating life history and sex allocation theories
   Yamaguchi S, Yusa Y, Sawada K, Takahashi S.
SUBJECT OF RESEARCH:
1. Spatial population and evolutionary dynamics in continuous space
2. Theoretical study on avian brood parasitism
3. Evolutionary games in space

SELECTED PUBLICATIONS:
1. How can distinct egg polymorphism be maintained in the rufescent prinia (Prinia rufescens)-plaintive cuckoo (Cacomantis merulinus) interactions- a modeling approach.
   Wei Liang, Canchao Yang, and Fugo Takasu.
2. Spatially explicit model applied to pine wilt disease dispersal based on host plant infestation.
   Tuyen Van Nguyen, Young-Seuk Park, Chang-Sik Jeoung, Won-II Choi, Yong-Kuk Kim, Il-Hyo Jung, Nanako Shigesada, Kohkichi Kawasaki, Fugo Takasu, Tae-Soo Chon.
3. Ancient origin and maternal inheritance of blue cuckoo eggs.
   Frode Fossøy, Michael D. Sorenson, Wei Liang, Torbjørn Ekrem, Arne Moksnes, Anders P. Møller, Jarkko Rutila, Eivin Røskaft, Fugo Takasu, Canchao Yang and Bård G. Stokke.
   Nature Communications 7, Article number: 10272.