

# Koki Mimura

RESEARCHER · PH.D. ENG.

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## Education

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### Tokyo University of Agriculture and Technology

PH.D. IN ENGINEERING

• Advisor: Dr. Shun Nakamura

Koganei, Tokyo

- March 2013

### Tokyo University of Agriculture and Technology

M.S. IN ENGINEERING

• Advisor: Dr. Shun Nakamura

Koganei, Tokyo

- March 2010

### Tokyo University of Agriculture and Technology

B.S. IN ENGINEERING

• Undergrad research advisor: Dr. Shun Nakamura

Koganei, Tokyo

- March 2008

## Employment

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- 2017- **Researcher**, Department of Functional Brain Imaging, National Institutes for Quantum and Radiological Science and Technology
- 2014-2017 **Research Fellow of the Japan Society for the Promotion of Science (PD)**, Department of Ultrastructural Research, National Center of Neurology and Psychiatry
- 2013-2014 **Research Fellow of the Japan Society for the Promotion of Science (PD)**, Research Group of Systems Ethology, Department of Biological Production, Tokyo University of Agriculture and Technology
- 2012-2013 **Research Fellow of the Japan Society for the Promotion of Science (DC2)**, Neuroengineering Lab., Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology

## Publications

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### PUBLISHED

- Yukiko Hori, Yuji Nagai, **Koki Mimura**, Tetsuya Suhara, Makoto Higuchi, Sebastien Bouret, Takafumi Minamimoto, Differential Contribution of Dopaminergic Transmission at D1-and D2-like Receptors to Cost/Benefit Evaluation for Motivation in Monkeys, *PLoS Biology*, 2020 (in press)
- Kei Oyama, Yukiko Hori, Yuji Nagai, Naohisa Miyakawa, **Koki Mimura**, Toshiyuki Hirabayashi, Ken-ichi Inoue, Tetsuya Suhara, Masahiko Takada, Makoto Higuchi, Takafumi Minamimoto, Chemogenetic dissection of the primate prefronto-subcortical pathways for working memory and decision-making, *Science Advances*, 2021 (in press)
- Yuji Nagai, Naohisa Miyakawa, Hiroyuki Takawa, Yukiko Hori, Kei Oyama, Bin Ji, Manami Takahashi, Xi-Ping Huang, Samuel T Slocum, Jeffrey F DiBerto, Yan Xiong, Takuya Urushihata, Toshiyuki Hirabayashi, Atsushi Fujimoto, **Koki Mimura**, Justin G English, Jing Liu, Ken-ichi Inoue, Katsushi Kumata, Chie Seki, Maiko Ono, Masafumi Shimojo, Ming-Rong Zhang, Yutaka Tomita, Jin Nakahara, Tetsuya Suhara, Masahiko Takada, Makoto Higuchi, Jian Jin, Bryan L Roth, Takafumi Minamimoto, Deschloroclozapine, a potent and selective chemogenetic actuator enables rapid neuronal and behavioral modulations in mice and monkeys, *Nature neuroscience*, 23 (9), 1157-1167, 2020
- Koki Mimura**, Tomofumi Oga, Tetsuya Sasaki, Keiko Nakagaki, Chika Sato, Kayo Sumida, Kohei Hoshino, Koichi Saito, Izuru Miyawaki, Tetsuya Suhara, Ichio Aoki, Takafumi Minamimoto, Noritaka Ichinohe, Abnormal axon guidance signals and reduced interhemispheric connection via anterior commissure in neonates of marmoset ASD model, *NeuroImage*, 195, 243-251, 2019
- Hiroshi Abe, Toshiaki Tani, Hiromi Mashiko, Naohito Kitamura, Naohisa Miyakawa, **Koki Mimura**, Kazuhisa Sakai, Wataru Suzuki, Tohru Kurotani, Hiroaki Mizukami, Akiya Watakabe, Tetsuo Yamamori, Noritaka Ichinohe, 3D reconstruction of brain section images for creating axonal projection maps in marmosets, *Journal of Neuroscience Methods*, 286, 102-113, 2019

- Mamiko Koshiba, Genta Karino, **Koki Mimura**, Shun Nakamura, Kunio Yui, Tetsuya Kunikata, Hideo Yamanouchi, Psycho-cognitive intervention for ASD from cross-species behavioral analyses of infants, chicks and common marmosets, *CNS & Neurological Disorders-Drug Targets*, 15 (5), 578-586, 2016
- Koki Mimura**, Hirohisa Kishino, Genta Karino, Etsuko Nitta, Aya Senoo, Kentaro Ikegami, Tetsuya Kunikata, Hideo Yamanouchi, Shun Nakamura, Kan Sato, Mamiko Koshiba, Potential of a smartphone as a stress-free sensor of daily human behaviour, *Behavioural brain research*, January 1, 2015
- Mamiko Koshiba, Aya Senoo, Genta Karino, Simpei Ozawa, Ikuko Tanaka, Yoshiko Honda, Setsuo Usui, Tohru Kodama, **Koki Mimura**, Shun Nakamura, Tetsuya Kunikata, Hideo Yamanouchi, Hironobu Tokuno, Susceptible period of socio-emotional development affected by constant exposure to daylight, *Neuroscience research*, 93, 91-98, 2015
- Koki Mimura**, Shun Nakamura, Mamiko Koshiba, A flexion period for attachment formation in isolated chicks to unfamiliar peers visualized in a developmental trajectory space through behavioral multivariate correlation analysis, *Neuroscience letters*, 547, 70-75, 2013
- Koki Mimura**, Yuka Shirakawa, Shun Nakamura, Mamiko Koshiba, Multivariate PCA analysis combined with Ward's clustering for verification of psychological characterization in visually and acoustically social contexts, *J. Clin. Toxicol*, 3 (1), 10.4172, 2013
- Koki Mimura**, Daijiro Mochizuki, Shun Nakamura, Mamiko Koshiba, A sensitive period of peer-social learning, *J. Clin. Toxicol*, 3, 158, 2013
- Mamiko Koshiba, Aya Senoo, **Koki Mimura**, Yuka Shirakawa, Genta Karino, Saya Obara, Shinpei Ozawa, Hitomi Sekihara, Yuta Fukushima, Toyotoshi Ueda, Hirohisa Kishino, Toshihisa Tanaka, Hidetoshi Ishibashi, Hideo Yamanouchi, Kunio Yui, Shun Nakamura, A cross-species socio-emotional behaviour development revealed by a multivariate analysis, *Scientific reports*, 3 (1), 1-7, 2013
- Mamiko Koshiba, Genta Karino, Aya Senoo, **Koki Mimura**, Yuka Shirakawa, Yuta Fukushima, Saya Obara, Hitomi Sekihara, Shimpei Ozawa, Kentaro Ikegami, Toyotoshi Ueda, Hideo Yamanouchi, Shun Nakamura, Peer attachment formation by systemic redox regulation with social training after a sensitive period, *Scientific reports*, 2503, 2013
- Mamiko Koshiba, Aya Seno, Genta Karino, Yuka Shirakawa, **Koki Mimura**, Takeshi Sagawa, Wakako Tsugawa, Koji Sode, Shun Nakamura, Blood Glucose Dependence on Emotional Behaviors and Body Surface Temperatures in Common Marmoset's Socio-Psychological Learning with Peers - for 'Development of Human-Environment Interface by Sensing and Multivariate Analysis of Bio-Ecosystem' -, *ECS Transactions*, 50 (28), 9, 2013
- Mamiko Koshiba, Yuka Shirakawa, **Koki Mimura**, Aya Senoo, Genta Karino, Shun Nakamura, Familiarity perception call elicited under restricted sensory cues in peer-social interactions of the domestic chick, *PloS one*, 8 (3), e58847, 2013
- Mamiko Koshiba, Shun Nakamura, **Koki Mimura**, Aya Senoo, Genta Karino, Shin Amemiya, T Miyaji, Tetsuya Kunikata, Hideo Yamanouchi, Socio-emotional development evaluated by Behaviour Output analysis for Quantitative Emotional State Translation: towards early diagnosis of individuals with developmental disorders, *OA Autism*, 1 (2), 18, 2013
- Yuka Shirakawa, **Koki Mimura**, Aya Senoo, Kenji Fujii, Takao Shimizu, Tadafumi Saga, Ikuko Tanaka, Yoshiko Honda, Hironobu Tokuno, Setsuo Usui, Toru Kodama, Wakako Tsugawa, Koji Sode, Shun Nakamura, Mamiko Koshiba, Multivariate correlation analysis suggested high ubiquinol and low ubiquinone in plasma promoted primate's social motivation and IR detected lower body temperature, *J. Clin. Toxicol*, 3 (160), 10.4172, 2013
- Aya Senoo, Teruhisa Okuya, Yasushi Sugiura, **Koki Mimura**, Yoshiko Honda, Ikuko Tanaka, Tohru Kodama, Hironobu Tokuno, Kunio Yui, Shun Nakamura, Setsuo Usui, Mamiko Koshiba, Effects of constant daylight exposure during early development on marmoset psychosocial behavior, *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 35 (6), 1493-1498, 2011
- Mamiko Koshiba, **Koki Mimura**, Yasushi Sugiura, Teruhisa Okuya, Aya Senoo, Hidetoshi Ishibashi, Shun Nakamura, Reading marmoset behavior 'semantics' under particular social context by multi-parameters correlation analysis, *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 35 (6), 1499-1504, 2011

## REVIEW ARTICLE

- Koki Mimura**, Kyonko Matsumura, Yuya Matsumura, Yuko Sekiya, Programming for Information Professionals. Beginner's guide to text analysis with R, *Information Science and Technology*, 70 (4), 181-186, 2020
- Shun Nakamura, Genta Karino, Aya Senoo, **Koki Mimura**, Yuka Shirakawa, Kazuyuki Yamazaki, Yuta Fukushima, Saya Obara, Hitomi Sekihara, Shinpei Ozawa, Kunio Yui, Mamiko Koshiba, Development and Neural Basis of Social Behavior, *Psychiatry et neurologia Japonica*, 114 (8), 921-927, 2012

## BOOK

Kieran Healy, Uryu Shinya, Akifumi Eguchi, **Koki Mimura**, *Data Visualization: A Practical Introduction* (Japanese Edition). Kodansha, Jan. 2021

## IN PREP

**Koki Mimura**, Yuji Nagai, Ken-ichi Inoue, Jumpei Matsumoto, Yukiko Hori, Chika Sato, Kei Kimura, Takashi Okauchi, Toshiyuki Hirabayashi, Hisao Nishijo, Noriaki Yahata, Masahiko Takada, Tetsuya Suhara, Makoto Higuchi, Takafumi Minamimoto, Chemogenetic activation of nigrostriatal dopamine neurons in freely moving common marmosets, *bioRxiv*, 2021

Yukiko Hori, **Koki Mimura**, Yuji Nagai, Atsushi Fujimoto, Kei Oyama, Erika Kikuchi, Ken-ichi Inoue, Masahiko Takada, Tetsuya Suhara, Barry J Richmond, Takafumi Minamimoto, Single caudate neurons encode temporally discounted value for formulating motivation for action, *bioRxiv*, May 18, 2020

Maiko Ono, Manami Takahashi, Aki Shimozawa, Masayuki Fujinaga, Wakana Mori, Yuji Nagai, **Koki Mimura**, Takeharu Minamihisamatsu, Shoko Uchida, Masafumi Shimojo, Yuhei Takado, Hiroyuki Takuwa, Naruhiko Sahara, Ming-Rong Zhang, Takafumi Minamimoto, Masato Hasegawa, Makoto Higuchi, In vivo visualization of propagating  $\alpha$ -synuclein pathologies in mouse and marmoset models by a bimodal imaging probe, C05-05, *bioRxiv*, January 25, 2021

Masafumi Shimojo, Maiko Ono, Hiroyuki Takuwa, **Koki Mimura**, Yuji Nagai, Masayuki Fujinaga, Tatsuya Kikuchi, Maki Okada, Chie Seki, Masaki Tokunaga, Jun Maeda, Yuhei Takado, Manami Takahashi, Takeharu Minamihisamatsu, Ming-Rong Zhang, Yutaka Tomita, Norihiro Suzuki, Anton Maximov, Tetsuya Suhara, Takafumi Minamimoto, Naruhiko Sahara, Makoto Higuchi, Genetically targeted reporter imaging of deep neuronal network in the mammalian brain, *bioRxiv*, Oct 20, 2020

## Awards, Fellowships, & Grants

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2019-2021	Grant-in-Aid for Scientific Research on Innovative Areas, MEXT KAKENHI (19H04996)	¥8,600,000
2017-2019	Grant-in-Aid for Scientific Research on Innovative Areas, MEXT KAKENHI (17H06040)	¥9,000,000
2015-2018	Grant-in-Aid for Young Scientists B, JSPS KAKENHI (15K21651)	¥3,100,000
2014-2017	Research Fellow of the Japan Society for the Promotion of Science (PD), JSPS KAKENHI (14J10961)	¥3,800,000
2012-2014	Research Fellow of the Japan Society for the Promotion of Science (DC2/PD), JSPS KAKENHI (12J03188)	¥1,800,000
2012	Best Presentation Award, 2012 Spring Meeting of Japanese Poultry Science Association, JPSA	

## Presentations

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### INVITED TALKS

**Koki Mimura**, Akifumi Eguchi, Shinya Uryu, *Data visualization with R*. Invited talk (tutorial session): Japanese Joint Statistical Meeting, Online, Sept. 2021.

**Koki Mimura**, *Unsupervised temporal segmentation of marmoset goal-directed behavior*, Invited talk: 10th International Symposium on Biology of Decision-Making, Paris, France, May 2021.

**Koki Mimura**, Chika Sato, Jumpei Matsumoto, Ichio Aoki, Noritaka Ichinohe, Tetsuya Suhara, Takafumi Minamimoto, *Atypical behavioral and neural phenotypes in a common marmoset model of autism spectrum disorders*, Invited talk: 12th International "Stress and Behavior" Society Regional Conference (Asia), Yokohama, Japan, July 2017

**Koki Mimura**, Noritaka Ichinohe, *Abnormal Intra-Group Vocal Communication within Primate Family including a Kid of Model of Autism*, Invited talk: 6th International "Stress and Behavior" Society Regional Conference (Asia), Kobe, Japan, July 2015

## ORAL PRESENTATIONS

**Koki Mimura**, Tomoaki Nakamura, Jumpei Matsumoto, Hisao Nishijo, Testuya Suhara, Daichi Mochihashi, Takafumi Minamimoto, *Body Motion Segmentation in Non-Human Primate Based on Gaussian Process HiddenSemi-Markov Model*, The 33rd Annual Conference of the Japanese Society for Artificial Intelligence, Niigata, Japan, 2019

**Koki Mimura**, Yuji Nagai, Ken-ichi Inoue, Testuya Suhara, Masahiko Takada, Takafumi Minamimoto, *PET-imaging guided chemogenetic manipulation of the nigrostriatal dopamine system*, Annual Meeting of Japan Society for Marmoset Research, Kyoto Univ., Kyoto, Japan, Jan. 2018

**Koki Mimura**, Keiko Nakagaki, Noritaka Ichinohe, *Disturbed vocal communication in common marmoset family with an autism-model child*, 24th International "Stress and Behavior" Conference Symposium, St. Petersburg, Russia, May 2017

**Koki Mimura**, Keiko Nakagaki, Noritaka Ichinohe, 75th Annual Meeting of the Japan Society of Animal Psychology, Japan Women's Univ., Tokyo, Japan, Sept. 2015

## RESEARCH AREA MEETINGS

**Koki Mimura**, *Social context segmentation analysis in a primate model of Autism Spectrum Disorder*. Invited talk: The 10th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, Online, Mar. 2021

**Koki Mimura**, *Social context segmentation analysis in a primate model of Autism Spectrum Disorder*. Invited talk: The 9th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, Online, Oct. 2020.

**Koki Mimura**, *Social context segmentation analysis in a primate model of Autism Spectrum Disorder*. Invited talk: The 8th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, Online, June 2020.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: The 7th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, Online, Dec. 2019.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: The 6th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, Tamagawa Univ., Tokyo, Japan, May. 2019.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: The 5th Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain, ATR, Nara, Japan, Sep. 2018.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: Joint Research Area Meeting of Scientific Research on Innovative Areas: "Adaptive Circuit Shift" and "Artificial Intelligence and Brain Science", OIST, Okinawa, Japan, May. 2018.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: The 3rd Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain Science, Tokyo, Japan, Dec. 2017.

**Koki Mimura**, *Computational Modeling of Dynamical Social Interaction in Non-Human Primate*. Invited talk: The 2nd Research Area Meeting of Scientific Research on Innovative Areas: Artificial Intelligence and Brain Science, Osaka Univ, Osaka, Japan, May 2017.

## POSTER PRESENTATIONS

Chika Sato, **Koki Mimura**, Takafumi Minamimoto, Noriaki Yahata, *The reproducibility of resting-state functional network analysis in marmoset functional MRI*, 49th Annual Meeting of the Japanese Society for Magnetic Resonance in Medicine, Online, Oct. 2020

Yuji Nagai, Naohisa Miyakawa, Hiroyuki Takuwa, Yukiko Hori, Kei Oyama, Bin Ji, Takahashi Manami, Xi-Ping Huang, Samuel T. Slocum, Yan Xiong, Toshiyuki Hirabayashi, Atsushi Fujimoto, **Koki Mimura**, Justin G. English, Jing Liu, Ken-ichi Inoue, Katsushi Kumata, Chie Seki, Maiko Ono, Masafumi Shimojo, Ming-Rong Zhang, Yutaka Tomita, Tetsuya Suhara, Masahiko Takada, Makoto Higuchi, Jian Jin, Brayan L. Roth, Takafumi Minamimoto, *A novel ligand "deschloroclozapine" selectively visualizes and activates chemogenetic receptors in non-human primates*, BRAIN & BRAIN PET 2019, Yokohama, Japan, July 2020

**Koki Mimura**, Jumpei Matsumoto, Chika Sato, Kei Kimura, Yukiko Hori, Yuji Nagai, Ken-ichi Inoue, Ichio Aoki, Hisao Nishijo, Testuya Suhara, Masahiko Takada, Noriaki Yahata, Takafumi Minamimoto. *A chemogenetic toolbox with multimodal imaging and motion tracking for free marmoset behavior*, Marmoset Bioscience Symposium, Chicago, Illinois, USA, Oct. 2019

- Koki Mimura**, Yuji Nagai, Ken-ichi Inoue, Suhara Testuya, Masahiko Takada, Takafumi Minamimoto, Using PET imaging to monitor chemogenetic manipulation of nigrostriatal dopamine system in common marmoset, Neuroscience2018, Kobe, Japan, July 2018
- Koki Mimura**, Jumpei Matsumoto, Hisao Nishijo, Tetsuya Suhara, Takafumi Minamimoto, *Marker-less 3D head direction tracking system in free moving common marmoset*, Annual Meeting of Japan Society for Marmoset Research, Kyoto Univ., Kyoto, Japan, Jan. 2018
- J. Matsumoto, H. Nishimaru, Y. Takamura, **K. Mimura**, A. Asaba, W. Suzuki, N. Ichinohe, T. Minamimoto, T. Ono, H. Nishijo, *3D-Tracker, an open-source 3D video based behavioral analysis system for laboratory animals for neuroscience*, Neuroscience 2017, Washington DC, USA
- Koki Mimura**, Chika Sato, Keiko Nakagaki, Ichio Aoki, Takafumi Minamimoto, Noritaka Ichinohe, *Atypical behavioral and neural phenotypes in a non-human primate model of autism spectrum disorders*, Society for Neuroscience, San Diego, California, USA, Nov. 2016

## Outreach & Professional Development

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### SERVICE AND OUTREACH

Nov. 2017 - **Tokyo.R**, Organizer

### LECTURE

April 2021	<b>BeggineR Session - Regression analysis</b> -, 91st Tokyo.R	Online
March 2021	<b>BeggineR Session - Nested data handling</b> -, 90th Tokyo.R	Online
Jan. 2021	<b>BeggineR Session - Data visualization</b> -, 89th Tokyo.R	Online
Sept. 2020	<b>Narrative of iris data</b> , 88th Tokyo.R	Online
June 2020	<b>BeggineR Session - Data analysis</b> -, 86th Tokyo.R	Online
May 2020	<b>BeggineR Session - Data visualization</b> -, 85th Tokyo.R	Online
Jan. 2020	<b>Landscape with R</b> , 83rd Tokyo.R	KPMG AZUSA
Oct. 2019	<b>BeggineR Session - Data visualization</b> -, 82nd Tokyo.R	CyberAgent
Sept. 2019	<b>IntRoduction &amp; DemonstRation</b> , 81st Tokyo.R	DIP
July 2019	<b>R Interface to Python</b> , 80th Tokyo.R	Cresco
June 2019	<b>BeggineR Session - Probability</b> -, 79th Tokyo.R	Infocom
May 2019	<b>BeggineR Session - Data analysis</b> -, 78th Tokyo.R	MS & AD
May 2019	<b>BeggineR Session</b> , Sendai.R #1	Datacom
April 2019	<b>BeggineR Session - Data analysis</b> -, 77th Tokyo.R	SONY
March 2019	<b>BeggineR Session - Data pipeline</b> -, 76th Tokyo.R	DeNA
Jan. 2019	<b>BeggineR Session - Data pipeline</b> -, 75th Tokyo.R	ALTOA
Oct. 2018	<b>BeggineR Session - Visualization &amp; Plot</b> -, 73rd Tokyo.R	eureka
Oct. 2018	<b>Concept of "BeginnerR Session" -Tokyo.R cases report-</b> , Tsukuba.R #1	Tsukuba
July 2018	<b>Landscape with R - the Japanese R community</b> -, 71st Tokyo.R	Yahoo!
June 2018	<b>BeggineR Session - Bayesian Modeling</b> -, 70th Tokyo.R	Microsoft
April 2018	<b>BeggineR Session - Data Import/Export</b> -, 69th Tokyo.R	DIP
March 2018	<b>BeggineR Session - Data Import/Export</b> -, 68th Tokyo.R	Softbank
Jan. 2018	<b>BeggineR Session - Data manipulation</b> -, 67th Tokyo.R	Otto
Dec. 2017	<b>BeggineR Session - Data manipulation</b> -, 66th Tokyo.R	DIP