

Curriculum Vitae

Kei Muto (武藤 慶)

Designated Associate Professor (Co-PI)

Institute of Transformative Bio-Molecules, Nagoya University
(The Ooi Group)

Room 505, ITbM Building, Furo-cho, Chikusa, Nagoya 464-8601, Japan.

Phone: +81-52-789-5534

E-mail: muto.kei.v4@f.mail.nagoya-u.ac.jp



Date of Birth

April 22, 1988

Citizenship

Japanese

Education

- | | |
|-----------|--|
| 2011 | B.S. Nagoya University, Japan
(Prof. Kenichiro Itami), <i>March 2011</i> |
| 2013 | M.S. Nagoya University, Japan
(Prof. Kenichiro Itami), <i>March 2013</i> |
| 2015 | Ph.D. Nagoya University, Japan
(Prof. Kenichiro Itami), <i>September 2015</i> |
| 2013–2016 | JSPS Research Fellowship for Young Scientists (DC1) |
| 2012 | Visiting Student (May–August), Wuhan University, China (Prof. Aiwen Lei) |

Academic Career

- | | |
|--------------|---|
| 2015–2016 | Postdoctoral Researcher, Institute of Transformative Bio-molecules, Nagoya University (Prof. Kenichiro Itami) |
| 2016–2020 | Assistant Professor, Department of Applied Chemistry, Waseda University
(with Prof. Junichiro Yamaguchi) |
| 2020–2022 | Assistant Professor, Waseda Institute for Advanced Study, Waseda University
(with Prof. Junichiro Yamaguchi) |
| 2022–2024 | Associate Professor (non-tenured), Waseda Institute for Advanced Study, Waseda University
(with Prof. Junichiro Yamaguchi) |
| 2024–present | Designated Associate Professor (Co-PI), Institute of Transformative Bio-molecules, Nagoya University (with Prof. Takashi Ooi) |

Awards and Honor

1. Lectureship Award (MEXT Grant-in-Aid for Transformative Research Area A, Japan, 2023)
2. Waseda University e-Teaching Award (Good Practice Award, 2023)
3. CSJ Special Young Scholar Lecture (2022)
4. Chugai Pharmaceutical Award in Synthetic Organic Chemistry, Japan (2020)
5. JXTG Energy Research Award (2018)
6. JXTG Energy Research Award (2017)
7. Inoue Research Award for Young Scientists (2017)
8. Reaxys PhD Prize Finalist (2016)
9. JSPS Ikushi Prize (2016)
10. Nagoya University, the Academic Encouragement Award (2016)
11. CSJ Oral Student Presentation Award (Chemical Society of Japan 2014, The 94th Annual Meeting)
12. Annual Research Awards (Nagoya University Program for Leading Graduate Schools Annual Meeting 2013)
13. The 4th Otsu Conference Fellow (October 2013)
14. JSPS Fellowship for Young Scientist (DC1: 2013–2016)
15. Distinguished Master's Thesis Award 2012 in Department of Chemistry, Nagoya University (March 2013)
16. Nagoya University Graduate School of Science Award (March 2013)
17. Poster Award (The 59th Symposium on Organometallic Chemistry, Japan, September 2012)
18. Poster Award (The 29th Seminar on Synthetic Organic Chemistry, Japan, September 2012)

19. Poster Award (The 100th Symposium on Organic Synthesis, Japan, November 2011)

Media

[Chem-Station Spotlight Research](#)

Research Grants

(External)

2016–2017 JSPS KAKENHI, Grant-in-Aid for Research Activity Start-up

2017–2019 JSPS KAKENHI, Grant-in-Aid for Young Scientists (B)

2018–2020 JSPS KAKENHI, Grant-in-Aid for Scientific Research on Innovative Areas (Research in a proposed research area, Hybrid Catalysis)

2019–2021 JSPS KAKENHI, Grant-in-Aid for Early-Career Scientists

2019–2020 The SATOMI Scholarship Foundation, Research Grant

2020–2021 JSPS KAKENHI, Grant-in-Aid for Scientific Research on Innovative Areas (Research in a proposed research area, Hybrid Catalysis)

2020–2022 The Sumitomo Foundation, Grant for Basic Science Research Projects

2020–2021 The Society of Synthetic Organic Chemistry, Chugai Pharm Award in Synthetic Organic Chemistry, Japan

2021–2024 JSPS KAKENHI, Grant-in-Aid for Scientific Research (C)

2024–2028 JSPS KAKENHI, Grant-in-Aid for Scientific Research (B)

(In Waseda University)

2016 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

2016 Waseda University, Support for Young Researchers “Early Bird Program”

2017 Waseda University, Support for Young Researchers “Early Bird Program”

2017 Waseda University, JXTG Energy “Support for Young Researchers”

2018 Waseda University, Grants for Special Research Projects (“Tokutei Kadai A”)

2018 Waseda University, JXTG Energy “Support for Young Researchers”

2020 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

2021 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

2022 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

2023 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

2024 Waseda University, Grants for Special Research Projects (“Tokutei Kadai”)

Publications (Total 67. Original paper: 49; Review: 10; Book and others: 8)

(51) TBA, Transformation using dearomatization

Wu, Q.; Muto, K.*; Yamaguchi, J.*

To be submitted

(50) Facile Generation of *ortho*-Quinodimethanes Toward Polycyclic Compounds

Inagaki, K.; Onozawa, Y.; Fukuhara, Y.; Yokogawa, D.; Muto, K.*; Yamaguchi, J.*

Submitted

(See also: *ChemRxiv* **2024**, DOI: [10.26434/chemrxiv-2024-dnf75](https://doi.org/10.26434/chemrxiv-2024-dnf75))

(49) 2*H*-Thiazolo[4,5-*d*][1,2,3]triazole: Synthesis, Functionalization, and Application in Scaffold-Hopping

Miyazaki, R.; Takada, F.; Kikuchi, T.; Oguro, Y.; Kamata, M.; Yukawa, T.; Kato, K.; Muto, K.*; Yamaguchi, J.*

Chem. Sci. **2024**, *15*, 15835–15840.

DOI: [10.1039/D4SC03874F](https://doi.org/10.1039/D4SC03874F)

(48) Versatile deacylative cross-coupling of aromatic ketones

Nakahara, H.; Isshiki, R.; Iizumi, K.; Kubo, M.; Muto, K.; Yamaguchi, J.*

Chem **2024**, *10*, 2916–2930.

DOI: [10.1016/j.chempr.2024.07.002](https://doi.org/10.1016/j.chempr.2024.07.002)

(See also: *ChemRxiv* **2024**, DOI: [10.26434/chemrxiv-2023-jx26c](https://doi.org/10.26434/chemrxiv-2023-jx26c))

(47) *Cine*-Substitution of Enolates: Enolate Dance/Coupling of Cycloalkenyl Pivalates by Nickel Catalysis

Moriya, E.; Muto, K.; Yamaguchi, J.*

ACS Catal. **2024**, *14*, 10412–10417.

DOI: [10.1021/acscatal.4c02707](https://doi.org/10.1021/acscatal.4c02707)

(See also: *ChemRxiv* **2024**, DOI: [10.26434/chemrxiv-2024-37kvr](https://doi.org/10.26434/chemrxiv-2024-37kvr))

- (46) Palladium-Catalyzed Denitrative Synthesis of Aryl Nitriles from Nitroarenes and Organocyanides
Iizumi, K.; Tanaka, H.; Muto, K.; Yamaguchi, J.*
Org. Lett. **2024**, *13*, e202300548.
DOI: [10.1021/acs.orglett.4c01118](https://doi.org/10.1021/acs.orglett.4c01118)
- (45) Pd-Catalyzed Cyclization/1,4-Difunctionalization of Bromoarenes with Diazo Compounds Leading to Bicyclic Skeletons
Fukuhara Y.; Kato, H.; Miyazaki, R.; Muto, K.*; Yamaguchi, J.*
Asian J. Org. Chem. **2023**, *13*, e202300548. (Invited contribution for Early Career Researcher Special Collection)
DOI: [10.1002/ajoc.202300548](https://doi.org/10.1002/ajoc.202300548)
- (44) Concise Synthesis of (±)-Fortuneicyclidins and (±)-Cephalotine B Enabled by Pd-Catalyzed Dearomative Spirocyclization
Uwabe, Y.; Muto, K.*; Yamaguchi, J.*
Chem. Eur. J. **2023**, *29*, e202302769 (VIP paper) DOI: [10.1002/chem.202302769](https://doi.org/10.1002/chem.202302769)
Selected as a CoverArt DOI: [10.1002/chem.202303565](https://doi.org/10.1002/chem.202303565)
Highlighted in [ChemistryViews](#)
(See also: *ChemRxiv* **2023**, DOI: [10.26434/chemrxiv-2023-jx26c](https://doi.org/10.26434/chemrxiv-2023-jx26c))
- (43) Chloroacetyl Boronate *N*-Tosylhydrazone as a Versatile Synthetic Building Block
Miyazaki, R.; Muto, K.*; Yamaguchi, J.*
Chem. Commun. **2023**, *59*, 7419-7422. (Open Access, Invited contribution for 2023 Emerging Investigators)
DOI: [10.1039/D3CC02086J](https://doi.org/10.1039/D3CC02086J)
(See also: *ChemRxiv* **2023**, DOI: [10.26434/chemrxiv-2023-5htqb](https://doi.org/10.26434/chemrxiv-2023-5htqb))
- (42) Pd-Catalyzed Denitrative Intramolecular Mizoroki–Heck Reaction
Asahara, K. K.; Muto, K.; Yamaguchi, J.*
Chem. Lett. **2023**, *52*, 299–302.
DOI: [10.1246/cl.230056](https://doi.org/10.1246/cl.230056)
- (41) Aryl Sulfide Synthesis via Aryl Exchange Reaction
Muto, K.; Isshiki, R.; Kurosawa, M. B.; Yamaguchi, J.*
Trends Chem. **2023**, *5*, 102–103.
DOI: [10.1016/j.trechm.2022.09.002](https://doi.org/10.1016/j.trechm.2022.09.002)
- (40) Unified Synthesis of Multiply Arylated Alkanes by Catalytic Deoxygenative Transformation of Diarylketones
Kurosawa, M. B.; Kato, K.; Muto, K.; Yamaguchi, J.*
Chem. Sci. **2022**, *13*, 10743-10751.
DOI: [10.1039/D2SC03720C](https://doi.org/10.1039/D2SC03720C)
(See also: *ChemRxiv* **2022**, DOI: [10.26434/chemrxiv-2022-h1860](https://doi.org/10.26434/chemrxiv-2022-h1860))
- (39) Synthesis and Properties of Palladium–Triazolopyridinylidene: Catalyst for Cross-Coupling Using Chloroarenes and Nitroarenes
Iizumi, K.; Nakayama, K. P.; Kato, K.; Muto, K.*; Yamaguchi, J.*
J. Org. Chem. **2022**, *87*, 11909–11918.
DOI: [10.1021/acs.joc.2c01562](https://doi.org/10.1021/acs.joc.2c01562)
(See also: *ChemRxiv* **2022**, DOI [10.26434/chemrxiv-2022-qs9s9](https://doi.org/10.26434/chemrxiv-2022-qs9s9))
- (38) Identification of α -Synuclein Proaggregator: Rapid Synthesis and Streamlining RT-QuIC Assays in Parkinson's Disease
Takada, F.; Kasahara, T.; Otake, K.; Maru, T.; Miwa, M.; Muto, K.; Sasaki, M.; Hirozane, Y.; Yoshikawa, M.*; Yamaguchi, J.*
ACS Med. Chem. Lett. **2022**, *13*, 1421–1426.
DOI: [10.1021/acsmchemlett.2c00138](https://doi.org/10.1021/acsmchemlett.2c00138)

- (37) Pd-Catalyzed 1,4-Carboamination of Bicyclic Bromoarenes with Diazo Compounds and Amines
Wu, Q.; Muto, K.*; Yamaguchi, J.*
Org. Lett. **2022**, *24*, 4129–4134.
DOI: [10.1021/acs.orglett.2c01233](https://doi.org/10.1021/acs.orglett.2c01233)
Most Read Article (Jul, 2022)
(See also: *ChemRxiv* **2022**, DOI: [10.26434/chemrxiv-2022-s5vdz](https://doi.org/10.26434/chemrxiv-2022-s5vdz))
- (36) Decarbonylative Reductive Coupling of Aromatic Esters by Nickel and Palladium Catalyst
Peng, Y.; Isshiki, R.; Muto, K.; Yamaguchi, J.*
Chem. Lett. **2022**, *51*, 749–753.
DOI: [10.1246/cl.220214](https://doi.org/10.1246/cl.220214)
(See also: *ChemRxiv* **2022**, DOI: [10.26434/chemrxiv-2022-s0sxl](https://doi.org/10.26434/chemrxiv-2022-s0sxl))
- (35) Convergent Azaspirocyclization of Bromoarenes with *N*-Tosylhydrazones by a Palladium Catalyst
Yanagimoto, A.; Uwabe, Y.; Wu, Q.; Muto, K.*; Yamaguchi, J.*
ACS Catal. **2021**, *11*, 10429–10435.
DOI: [10.1021/acscatal.1c02627](https://doi.org/10.1021/acscatal.1c02627)
Supplementary Cover, Most Read Article (Aug, 2021)
(See also: *ChemRxiv* **2021**, DOI: [10.26434/chemrxiv.14762478](https://doi.org/10.26434/chemrxiv.14762478))
- (34) Ni-Catalyzed Aryl Sulfide Synthesis through an Aryl Exchange Reaction
Isshiki, R.; Kurosawa, M. B.; Muto, K.; Yamaguchi, J.*
J. Am. Chem. Soc. **2021**, *143*, 10333–10340.
DOI: [10.1021/jacs.1c04215](https://doi.org/10.1021/jacs.1c04215)
Most Read Article (July, 2021), *Press release* (Japanese), *Highlighted in newspaper*
(see also: *ChemRxiv* **2021**, DOI: [10.26434/chemrxiv.14462376](https://doi.org/10.26434/chemrxiv.14462376))
- (33) Decarbonylative Synthesis of Aryl Nitriles from Aromatic Esters and Organocyanides by a Nickel Catalyst
Iizumi, K.; Kurosawa, M. B.; Isshiki, R.; Muto, K.; Yamaguchi, J.*
Synlett **2021**, *32*, 1555–1559. (invited contribution)
DOI: [10.1055/s-0040-1705943](https://doi.org/10.1055/s-0040-1705943)
- (32) Catalytic Three-component C–C Bond Forming Dearomatization of Bromoarenes with Malonates and Diazo Compounds
Kato, H.; Musha, I.; Komatsuda, M.; Muto, K.*; Yamaguchi, J.*
Chem. Sci. **2020**, *11*, 8779–8784.
DOI: [10.1039/D0SC02881A](https://doi.org/10.1039/D0SC02881A)
(see also: *ChemRxiv* DOI: [10.26434/chemrxiv.12234740](https://doi.org/10.26434/chemrxiv.12234740))
- (31) Ester dance reaction on the aromatic ring
Matsushita, K.; Takise, R.; Muto, K.; Yamaguchi, J.*
Sci. Adv. **2020**, *6*, eaba7614.
DOI: [10.1126/sciadv.aba7614](https://doi.org/10.1126/sciadv.aba7614)
(see also: *ChemRxiv* DOI: [10.26434/chemrxiv.11472264.v1](https://doi.org/10.26434/chemrxiv.11472264.v1))
- (30) Catalytic Deoxygenative Coupling of Aromatic Esters with Organophosphorus Compounds
Kurosawa, B. M.; Isshiki, R.; Muto, K.; Yamaguchi, J.*
J. Am. Chem. Soc. **2020**, *142*, 7386–7392.
DOI: [10.1021/jacs.0c02839](https://doi.org/10.1021/jacs.0c02839)
(see also: *ChemRxiv* DOI: [10.26434/chemrxiv.11973585](https://doi.org/10.26434/chemrxiv.11973585))
- (29) Pd-Catalyzed C4-Dearylative Allylation of Benzyl Ammoniums with Allyltributylstannane
Kayashima, Y.; Komatsuda, M.; Muto, K.*; Yamaguchi, J.*
Chem. Lett. **2020**, *49*, 836–839.
DOI: [10.1246/cl.200216](https://doi.org/10.1246/cl.200216)
Editor's Choice, Top Accessed Article (2020 July), Inside Back Cover ([Link](#))
(see also: *ChemRxiv* DOI: [10.26434/chemrxiv.12015663](https://doi.org/10.26434/chemrxiv.12015663))

- (28) Dearomative Allylation of Naphthyl Cyanohydrins by Palladium Catalysis: Catalyst-Enhanced Site Selectivity
Yanagimoto, A.; Komatsuda, M.; Muto, K.*; Yamaguchi, J.*
Org. Lett. **2020**, *22*, 3423–3427.
DOI: [10.1021/acs.orglett.0c00897](https://doi.org/10.1021/acs.orglett.0c00897)
(see also: ChemRxiv DOI: [10.26434/chemrxiv.11961987](https://doi.org/10.26434/chemrxiv.11961987))
- (27) Palladium-Catalyzed Mizoroki–Heck Reaction of Nitroarenes and Styrene Derivatives
Okita, T.; Asahara, K. K.; Muto, K.; Yamaguchi, J.*
Org. Lett. **2020**, *22*, 3205–3208. (DOI: [10.1021/acs.orglett.0c00983](https://doi.org/10.1021/acs.orglett.0c00983))
(see also: ChemRxiv DOI: [10.26434/chemrxiv.11988516](https://doi.org/10.26434/chemrxiv.11988516))
- (26) Ester Transfer Reaction of Aromatic Esters with Haloarenes and Arenols by a Nickel Catalyst
Isshiki, R.; Inayama, N.; Muto, K.; Yamaguchi, J.*
ACS Catal. **2020**, *10*, 3490–3494.
DOI: [10.1021/acscatal.0c00291](https://doi.org/10.1021/acscatal.0c00291)
Most Read Article (March, 2020), *Press release* (Japanese), *Highlighted in newspaper* (NikkeiSangyoShinbun)
- (25) Pd-Catalyzed Alkenyl Thioether Synthesis from Thioesters and N-Tosylhydrazones
Ishitobi, K.; Muto, K.; Yamaguchi, J.*
ACS Catal. **2019**, *9*, 11685–11690
DOI: [10.1021/acscatal.9b04212](https://doi.org/10.1021/acscatal.9b04212)
- (24) Pd-Catalyzed Dearomative Three-Component Reaction of Bromoarenes with Diazo Compounds and Allylborates
Komatsuda, M.; Kato, H.; Muto, K.*; Yamaguchi, J.*
ACS Catal. **2019**, *9*, 8991–8995.
DOI: [10.1021/acscatal.9b03461](https://doi.org/10.1021/acscatal.9b03461)
Most Read Article (September, 2019)
(see also: ChemRxiv DOI: [10.26434/chemrxiv.8989130/1](https://doi.org/10.26434/chemrxiv.8989130/1))
- (23) Pd-Catalyzed Denitrative Intramolecular C–H Arylation
Asahara, K. K.; Okita, T.; Saito, A. N. Muto, K; Nakao, Y.; Yamaguchi, J.*
Org. Lett. **2019**, *21*, 4721–4724.
DOI: [10.1021/acs.orglett.9b01593](https://doi.org/10.1021/acs.orglett.9b01593)
Most Read Article (July, 2019)
- (22) Pd-Catalyzed Dearomative Allylation of Benzyl Phosphates
Komatsuda, M.; Muto, K.*; Yamaguchi, J.*
Org. Lett. **2018**, *20*, 4354–4357.
DOI: [10.1021/acs.orglett.8b01807](https://doi.org/10.1021/acs.orglett.8b01807)
Most Read Article (August, 2018)
- (21) Synthesis of A Heptaaryloquinoline: Unusual Disconnection for Constructing Isoquinoline Frameworks
Asako, T.; Suzuki, S.; Itami, K.; Muto, K.; Yamaguchi, J.*
Chem. Lett. **2018**, *47*, 968–970.
DOI [10.1246/cl.180429](https://doi.org/10.1246/cl.180429)
Highlights Editor's Choice
- (20) Dibenzofuran Synthesis: Decarbonylative Intramolecular C–H Arylation of Aromatic Esters
Okita, T.; Komatsuda, M.; Saito, A. N.; Hisada, T.; Takahara, T. T.; Nakayama, K. P.; Isshiki, R.; Takise, R.; Muto, K.; Yamaguchi, J.*
Asian J. Org. Chem. **2018**, *7*, 1358–1361. DOI [10.1002/ajoc.201800207](https://doi.org/10.1002/ajoc.201800207)
- (19) Decarbonylative Methylation of Aromatic Esters by a Nickel Catalyst
Okita, T.; Muto, K.; Yamaguchi, J.*
Org. Lett. **2018**, *20*, 3132–3135. DOI [10.1021/acs.orglett.8b01233](https://doi.org/10.1021/acs.orglett.8b01233)

- (18) Pd-Catalyzed Decarbonylative C–H Coupling of Azoles and Aromatic Esters
Matsushita, K.; Takise, R.; Hisada, T.; Suzuki, S.; Isshiki, R.; Itami, K.; Muto, K.; Yamaguchi, J.*
Chem Asian. J. **2018**, *13*, 2393–2396. DOI: [10.1002/asia.201800478](https://doi.org/10.1002/asia.201800478)
- (17) Decarbonylative Aryl Thioether Synthesis by Ni Catalysis
Ishitobi, K.; Isshiki, R.; Asahara, K. K.; Lim, C.; Muto, K.; Yamaguchi, J.*
Chem. Lett. **2018**, *47*, 756–759. DOI: [10.1246/cl.180226](https://doi.org/10.1246/cl.180226)
- (16) Decarbonylative C–P Bond Formation using Aromatic Esters and Organophosphorus Compounds
Isshiki, R.; Muto, K.; Yamaguchi, J.*
Org. Lett. **2018**, *20*, 1150–1153. DOI: [10.1021/acs.orglett.8b00080](https://doi.org/10.1021/acs.orglett.8b00080)
- (15) Catalytic α -Arylation of Ketones with Heteroaromatic Esters
Isshiki, R.; Takise, R.; Itami, K.; Muto, K.; Yamaguchi, J.*
Synlett **2017**, *28*, 2559–2603. DOI: [10.1055/s-0036-1589120](https://doi.org/10.1055/s-0036-1589120)
- (14) Synthesis of Multiply Arylated Pyridines
Asako, T.; Hayashi, W.; Suzuki, S.; Amaike, K.; Itami, K.; Muto, K.; Yamaguchi, J.*
Tetrahedron **2017**, *73*, 3669–3676, (Invited contribution). DOI: [10.1016/j.tet.2017.03.095](https://doi.org/10.1016/j.tet.2017.03.095)
- (13) Decarbonylative Diaryl Ether Synthesis by Pd and Ni Catalysis
Takise, R.; Isshiki, R.; Muto, K.; Itami, K.*; Yamaguchi, J.*
J. Am. Chem. Soc. **2017**, *139*, 3340–3343. DOI: [10.1021/jacs.7b00049](https://doi.org/10.1021/jacs.7b00049)
Highly cited paper (Web of Science)
- (12) Palladium-Catalyzed Decarbonylative Alkynylation of Aromatic Esters
Okita, T.; Kumazawa, K.; Takise, R.; Muto, K.; Itami, K.*; Yamaguchi, J.*
Chem. Lett. **2016**, *46*, 218–220. DOI: [10.1246/cl.161001](https://doi.org/10.1246/cl.161001)
- (11) Palladium-Catalyzed Decarbonylative Cross-Coupling of Azinecarboxylates with Arylboronic Acids
Muto, K.; Hatakeyama, T.; Itami, K.; Yamaguchi, J.*
Org. Lett. **2016**, *18*, 5106–5109. DOI: [10.1021/acs.orglett.6b02556](https://doi.org/10.1021/acs.orglett.6b02556)
- (10) C–H Arylation and Alkenylation of Imidazoles by Nickel Catalysis: Solvent accelerated Imidazole C–H Activation
Muto, K.; Hatakeyama, T.; Yamaguchi, J.; Itami, K.*
Chem. Sci. **2015**, *6*, 6792–6798. DOI: [10.1039/C5SC02942B](https://doi.org/10.1039/C5SC02942B)
- (9) C–H Activation Generates Period Shortening Molecules Targeting Cryptochrome in the Mammalian Circadian Clock
Oshima, T.; Yamanaka, I.; Kumar, A.; Yamaguchi, J.; Nishiwaki-Ohkawa, T.; Muto, K.; Kawamura, R.; Hirota, T.; Yagita, K.; Irle, S.*; Kay, S. A.*; Yoshimura, T.*; Itami, K.*
Angew. Chem., Int. Ed. **2015**, *54*, 7193–7197. DOI: [10.1002/anie.201502942](https://doi.org/10.1002/anie.201502942)
- (8) Decarbonylative Organoboron Cross-coupling of Esters by Nickel Catalysis
Muto, K.; Yamaguchi, J.*; Musaev, D. G.*; Itami, K.*
Nature Commun. **2015**, *6*, 7508. DOI: [10.1038/ncomms8508](https://doi.org/10.1038/ncomms8508)
Highlighted in Nature Asia.
Highly cited paper (Web of Science)
- (7) Key Mechanistic Features of Ni-catalyzed C–H/C–O Biaryl Coupling of Azoles and Naphthalen-2-yl Pivalates
Xu, H.; Muto, K.; Yamaguchi, J.; Zhao, C.; Itami, K.*; Musaev, D. G.*
J. Am. Chem. Soc. **2014**, *136*, 14834–13844. DOI: [10.1021/ja5071174](https://doi.org/10.1021/ja5071174)
- (6) Nickel-Catalyzed α -Arylation of Ketones with Phenol Derivatives
Takise, R.; Muto, K.; Yamaguchi, J.*; Itami, K.*
Angew. Chem., Int. Ed. **2014**, *53*, 6791–6794. DOI: [10.1002/anie.201403823](https://doi.org/10.1002/anie.201403823)

- (5) Isolation, Structure, and Reactivity of an Arylnickel(II) Pivalate Complex in Catalytic C-H/C-O Biaryl Coupling
Muto, K.; Yamaguchi, J.*; Lei, A.*; Itami, K.*
J. Am. Chem. Soc. **2013**, *135*, 16384–16387. DOI: 10.1021/ja409803x
- (4) C–H Alkenylation of Azoles with Enols and Esters by Nickel Catalysis
Meng, L.; Kamada, Y.; Muto, K.; Yamaguchi, J.*; Itami, K.*
Angew. Chem., Int. Ed. **2013**, *52*, 10048–10051. DOI: 10.1002/anie.201304492
- (3) Decarbonylative C–H Coupling of Azoles and Aryl Esters: Unprecedented Nickel Catalysis and Application to Synthesis of Muscoride A
Amaike, K.; Muto, K.; Yamaguchi, J.*; Itami, K.*
J. Am. Chem. Soc. **2012**, *134*, 13573–13576. DOI: 10.1021/ja306062c
Highly cited paper (Web of Science)
- (2) Nickel-Catalyzed C–H/C–O coupling of Azoles with Phenol Derivatives
Muto, K.; Yamaguchi, J.; Itami, K.*
J. Am. Chem. Soc. **2012**, *134*, 169–172. DOI: 10.1021/ja210249h
Most Read Articles in JACS during December 2011
Highlighted as Synstory in Synform Highlighted in Newspapers (Chunichi, Yomiuri, Yahoo! News, Mynavi News and so on...)
Nagoya University Press Release
Highly cited paper (Web of Science)
- (1) Nickel-Catalyzed C–H Arylation of Azoles with Haloarenes: Scope, Mechanism, and Application to the Synthesis of Bioactive Molecules
Yamamoto, T.; Muto, K.; Komiyama, M.; Canivet, J.; Yamaguchi, J.; Itami, K.*
Chem. Eur. J. **2011**, *17*, 10113–10122. DOI: 10.1002/chem.201101091

Reviews

- (10) パラジウム触媒によるベンジルおよびアリール求電子剤の脱芳香族的変換反応の開発
Kato, H.; Muto, K.*; Yamaguchi, J.*
J. Synth. Org. Chem. Jpn. **2024**, *82*, 965–978. DOI: [10.5059/yukigoseikyokaishi.82.965](https://doi.org/10.5059/yukigoseikyokaishi.82.965) (Japanese)
- (9) Development of Pd-Catalyzed Denitrative Couplings
Asahara, K. K.; Kashiwara, M.; Muto, K.; Nakao, Y.; Yamaguchi, J.*
J. Synth. Org. Chem. Jpn. **2021**, *79*, 11–21. DOI: [10.5059/yukigoseikyokaishi.79.11](https://doi.org/10.5059/yukigoseikyokaishi.79.11)
- (8) Transition-Metal-Catalyzed Denitrative Coupling of Nitroarenes
Muto, K.; Okita, T.; Yamaguchi, J.*
ACS Catal. **2020**, *10*, 9856–9871. DOI: [10.1021/acscatal.0c02990](https://doi.org/10.1021/acscatal.0c02990)
Most Read Articles (2020)
- (7) Decarbonylative Coupling Reaction of Aromatic Esters
Isshiki, R.; Okita, T.; Muto, K.; Yamaguchi, J.*
J. Synth. Org. Chem. Jpn. **2018**, *76*, 300–314. DOI: [10.5059/yukigoseikyokaishi.76.300](https://doi.org/10.5059/yukigoseikyokaishi.76.300) (Japanese)
- (6) Synthesis of Fully Arylated (Hetero) arenes by Coupling Reaction
Asako, T.; Muto, K.; Yamaguchi, J.*
J. Synth. Org. Chem. Jpn. **2018**, *76*, 98–110. DOI: [10.5059/yukigoseikyokaishi.76.98](https://doi.org/10.5059/yukigoseikyokaishi.76.98) (Japanese)
- (5) Cross-coupling of aromatic esters and amides”
Takise, R.; Muto, K.; Yamaguchi, J.*
Chem. Soc. Rev. **2017**, *46*, 5864–5888. DOI: [10.1039/C7CS00182G](https://doi.org/10.1039/C7CS00182G)
Inside Back Cover DOI: [10.1039/C7CS90100C](https://doi.org/10.1039/C7CS90100C) **Highly cited paper (Web of Science)**
- (4) Catalytic Enantioselective Dihalogenation Reaction of Alkene
Kei Muto*
J. Synth. Org. Chem. Jpn. **2016**, *74*, 1225–1226. DOI: [10.5059/yukigoseikyokaishi.74.1225](https://doi.org/10.5059/yukigoseikyokaishi.74.1225) (Japanese)

- (3) “Nickel-Catalyzed Aromatic C–H Functionalization”
Yamaguchi, J.*; Muto, K.; Itami, K.*
Top. Curr. Chem, **2016**, *374*, 55. DOI:[10.1007/s41061-016-0053-z](https://doi.org/10.1007/s41061-016-0053-z)
- (2) “Nickel-Catalyzed Direct Coupling of Heteroarenes”
Yamaguchi, J.; Muto, K.; Amaike, K.; Yamamoto, T.; Itami, K.*
J. Synth. Org. Chem. Jpn. **2013**, *71*, 576–587. DOI: 10.5059/yukigoseikyokaishi.71.576 (Japanese)
- (1) “Recent Progress in Nickel-Catalyzed Biaryl Coupling”
Yamaguchi, J.*; Muto, K.; Itami, K.*
Eur. J. Org. Chem. **2013**, 19–30. DOI: 10.1002/ejoc.201200914
Highly cited paper (Web of Science)

Books and others

- (9) TBA (Pd-catalyzed dearomatization)
Muto, K.; Yamaguchi, J.
Submitted
- (8) 「光で翻訳を制御する分子：ピューロスイッチ」
武藤慶, 日本薬学会 ファルマシア **2023**, *59*, 7, 679. ([Link](#))
- (7) Muto, K.; Yamaguchi, J. Cross-Coupling of Aromatic Esters by Decarbonylation. In *Amide Bond Activation: Concepts and Reactions*; Szostak, M., Ed.; Wiley-VCH, Weinheim, 2022; pp 453–486.
- (6) 「有機合成のための新触媒反応 101」 檜山為次郎、野崎京子、中尾佳亮、中野幸司 編集
東京化学同人, 分担執筆 [項目 54,55, 60, 71]
- (5) 「武漢大学での武者修行」 (Japanese)
武藤慶, 近畿化学協会 有機金属部会 OMNews, **2021**, *2*, 38–39. ([Link](#))
- (4) Otsu Conference 2018 Reports 第9回大津会議 有機合成の夢を語る
Ikemoto, K.; Muto, K.; Nogi, K. *J. Synth. Org. Chem. Jpn.* **2018**
- (3) “Lewis 酸でヒドリドを引き抜く 触媒的 FLPs 形成による C–H 変換反応” (Japanese)
武藤慶, 化学 (化学同人), 2019 年 1 月号
- (2) Otsu Conference 2017 Reports 第8回大津会議 有機合成の夢を語る
Morita, M.; Ikemoto, K.; Muto, K. *J. Synth. Org. Chem. Jpn.* **2018**
- (1) ニッケル触媒を用いた新しいクロスカップリング反応とその応用
伊丹 健一郎, 山口 潤一郎, 天池 一真, 武藤 慶
(株) 技術情報協会 触媒の設計・反応制御 事例集 **2013**, 624–645.

Presentations

- (45) TBA
Kei Muto
CSJ Annual meeting, 3/28, 2025
- (44) TBA
Kei Muto
Otsu Minisymposium (Invited), 11/19, 2024
- (43) 「未踏をいくことの楽しさ」
武藤慶
長野県諏訪清陵高校 SSH 講演会、長野(招待講演)、2024/8/22
- (42) "Organic Synthesis Playing with The Unique Reactivity of Benzyl-Palladium"
Kei Muto
Osaka University (Invited), 5/18, 2024
- (41) "Organic Synthesis Playing with The Unique Reactivity of Benzyl-Palladium"
Kei Muto
Keio Organic Chemistry Symposium for Young Researchers (Invited), 5/11, 2024

- (40) "Multi-Dimensional Transformation of Aromatic Compounds through Benzyl-Palladium"
Kei Muto
Nagoya University ITbM, (Invited), 4/15, 2024
- (39) "Multi-Dimensional Transformation of Aromatic Compounds through Benzyl-Palladium"
Kei Muto
University of Southampton, Invited (Lectureship award), 12/15, 2023
- (38) "Multi-Dimensional Transformation of Aromatic Compounds through Benzyl-Palladium"
Kei Muto
University of Manchester, Invited (Lectureship award), 12/13, 2023
- (37) "Multi-Dimensional Transformation of Aromatic Compounds through Benzyl-Palladium"
Kei Muto
Paris-Scalay University, Invited (Lectureship award), 12/11, 2023
- (36) "Multi-Dimensional Transformation of Aromatic Compounds through Benzyl-Palladium"
Kei Muto
Ecole Polytechnique, Invited (Lectureship award), 12/08, 2023
- (35) "Catalytic Dearomative Azaspirocyclization of Bromoarenes with N-Tosylhydrazones and Synthesis of Cephalotaxus Alkaloids"
○Kei Muto, Yota Uwabe, Junichiro Yamaguchi
The 15th International Kyoto Conference on New Aspects of Organic Chemistry (IKCOC15), OP-19, Rihga Royal Hotel KYOTO, Japan, 11/22, 2023
- (34) "Catalytic Dearomative Azaspirocyclization of Bromoarenes with N-Tosylhydrazones and Synthesis of Cephalotaxus Alkaloids"
○Kei Muto, Yota Uwabe, Junichiro Yamaguchi
21st International Symposium on Organometallic Chemistry Directed Toward Organic Synthesis (OMCOS21) (PS127), The Sheraton Vancouver Wall Center, Canada, 7/25, 2023
- (33) ベンジルパラジウム種を活かした触媒的な脱芳香族的官能基化 (招待講演)
○武藤 慶
東京農工大学 招待講演、東京農工大学小金井キャンパス 東京、12月16日、2022年
- (32) ベンジルパラジウムを鍵とする不活性芳香族の脱芳香族的官能基化 (受賞講演)
武藤慶
日本化学会 第102春季年会、Online、2022年3月25日 若い世代の特別講演 [B201-3pm-05]
- (31) 触媒的結合切断を起点とする新奇分子変換: 芳香環交換反応と脱芳香族的官能基化 (招待講演)
武藤慶
ハイブリッド触媒 若手道場 Online, 2月5日, 2022年
- (30) "Organic Synthesis by Breaking Arenes: Development of Catalytic Dearomative Functionalization"
Kei Muto, and coworkers
13th AFMC International Medicinal Chemistry Symposium (AIMECS2021), Dec. 1st, 2021 (Oral, online, International)
- (29) 「ベンジルパラジウム種を活かした触媒的脱芳香族的官能基化反応」(招待講演)
武藤慶
第48回オルガノメタリックセミナー「効率的分子変換のフロンティア」、早稲田大学、11月20日、2021年
- (28) ベンジルパラジウムを経由するプロモアレーンの触媒的脱芳香族的官能基化」(口頭)
武藤慶・加藤弘基・柳本愛華・上部耀大・ウチクン・武者樹・小松田雅晃・山口潤一郎
第67回有機金属化学討論会 (O3-02)、オンライン、2021年9月10日
- (27) "Organic Synthesis by Breaking Arenes: Development of Catalytic Dearomative Functionalization" (Invited)
Kei Muto
Reaxys PhD Prize Virtual Symposium, Oct. 1st, 2020 (Oral, online, International)
- (26) 壊すことで分子をつくる: 脱芳香族的合成法の開発
武藤慶
令和元年度 日本学術振興会育志賞研究発表会・日本学士院 3月4日, 2020年
- (25) "Catalyst Design toward Selective Dearomative Functionalizations" (Invited)
Kei Muto
The Chemical Society of Japan 2019, 99th Annual Meeting-Special Program Lecture, Konan Univ., Mar 19, 2019.
- (24) 「C-O 結合切断を起点とする新奇触媒反応の開発」(Invited)
武藤慶
第二回産総研化学研究シンポジウム・産総研 10月12日, 2018年
- (23) "Pd-catalyzed Dearomative C-C Bond Formation of Benzyl Alcohols"(ポスター)
武藤慶
第2回大津会議合同研究発表会・びわ湖大津プリンスホテル 2017年9月11日

- (22) 「分子触媒による新奇分子連結反応の開発」 (口頭)
武藤慶
平成 29 年度育志賞研究発表会・大阪大学中之島センター 2017 年 9 月 5 日
- (21) "Development of Catalytic Decarbonylative Coupling of Aromatic Esters"
Kei Muto, Ryosuke Takise, Ryota Isshiki, Toshimasa Okita, Kazushi Kumazawa, Kenichiro Itami, Junichiro Yamaguchi
The 19th OMCOS (PP2-48)・ICC Jeju, Korea, 2017 年 6 月 28 日 (International)
- (20) 「エステル切断を軸とする新規カップリング反応の開発」
武藤慶
第三回中分子戦略若手シンポジウム・京都 2017 年 3 月 7 日
- (19) "Decarbonylative Suzuki–Miyaura Coupling by Nickel Catalysis"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
The Chemical Society of Japan 2015, 95th Annual Meeting
Nihon University, Chiba, Japan, March 27, 2015. (Oral)
- (18) "Decarbonylative Cross-Coupling of Phenyl Esters and Arylboronic Acids with Ni Catalyst"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
IGER Annual Meeting
Nagoya University, Aichi, Japan, December 18, 2014. (Poster)
- (17) "Ni-Catalyzed C–H/C–O Couplings: Catalyst Development and Mechanistic Studies"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
XXVI International Conference on Organometallic Chemistry (ICOMC 2014), Royton Sapporo, Hokkaido, Japan, July 17, 2014. (Poster, International)
- (16) "Ni-Catalyzed C–H/C–O Couplings: Development and Mechanistic Studies"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
Core to Core/IRTG Meeting Programs on Elements Function for Transformative Catalysis and Materials
Nagoya University, Aichi, Japan, June 13, 2014. (Oral, International)
- (15) "Nickel-Catalyzed C–H/C–O Biaryl Coupling: Catalyst Developments and Mechanistic Studies"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
The Chemical Society of Japan 2014, 94th Annual Meeting
Nagoya University, Aichi, Japan, March 27, 2014. (Oral)
- (14) "Ni-Catalyzed C–H coupling of Heteroarenes: Development, Mechanism, and Applications"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
IGER Annual Meeting
Nagoya University, Aichi, Japan, January 8, 2014. (Oral)
- (13) "Direct C–H Coupling through Nickel Catalysis"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
4th Otsu Conference 2013
Otsu Prince Hotel, Shiga, Japan, October 23, 2013. (Oral, International)
- (12) "Ni-Catalyzed C–H/C–O Coupling of Azoles with Phenol Derivatives: Development, Mechanistic Studies, and Applications"
Kei Muto, Junichiro Yamaguchi, Aiwen Lei, and Kenichiro Itami
17th IUPAC International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis
Lincoln Center, Colorado, USA, July 29, 2013. (Poster, International)
- (11) "Direct C–H Arylation of Heteroarenes by Nickel Catalyst"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
3rd International Symposium on Molecular Activation
Sheraton Steamboat Resort, Colorado, USA, July 27, 2013. (Oral, International)
- (10) "Nickel-Catalyzed C–H Arylation of Heteroarenes"
Kei Muto, Kazuma Amaike, Junichiro Yamaguchi, and Kenichiro Itami
The 46th Meeting for Young Scientists in Organometallic Chemistry
Zao Royal Hotel, Miyagi, Japan, July 9, 2013. (Poster)
- (9) "Nickel-Catalyzed Direct C–H Arylation of Heteroarenes"
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
The Improvement of Prominent Graduate School Meeting for Young Scientists
Kyoto University, Kyoto, Japan, March 14, 2013. (Poster)
- (8) "Nickel-Catalyzed Direct Arylation of Heteroarenes"
Kei Muto, Kazuma Amaike, Junichiro Yamaguchi, and Kenichiro Itami
59th Symposium on Organometallic Chemistry
Osaka University, Osaka, Japan, September 14, 2012. (Poster)

- (7) “Nickel-Catalyzed Direct Arylation of Heteroarenes”
Kei Muto, Kazuma Amaike, Junichiro Yamaguchi, and Kenichiro Itami
 The 29th Seminar on Synthetic Organic Chemistry
 Convention Arts Center, Shizuoka, Japan, September 6, 2012. (Poster)
- (6) “Ni-Catalyzed C–H/C–O Coupling of Azoles and Phenol Derivatives”
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
 The Chemical Society of Japan 2012, 92th Annual Meeting
 Keio University, Kanagawa, Japan, March 28, 2012. (Oral)
- (5) “Ni-Catalyzed Direct C–H Arylation of Heteroarenes”
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
 The 100th Symposium on Organic Synthesis
 Waseda University, Tokyo, Japan, November 11, 2011. (Oral)
- (4) “Ni-Catalyzed Direct C–H Arylation of Heteroarenes”
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
 The 100th Symposium on Organic Synthesis
 Waseda University, Tokyo, Japan, November 11, 2011. (Poster)
- (3) “Nickel-Catalyzed C–H Arylation of Azoles with Haloarenes”
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
 The 10th Joint Seminar University of Münster
 Nagoya University, Aichi, Japan, October 4, 2011. (Poster, International)
- (2) “Nickel-Catalyzed C–H/C–X Arylation of Heteroarenes”
Kei Muto, Junichiro Yamaguchi, and Kenichiro Itami
 The 4th Global COE in Chemistry Annual Symposium
 Nagoya University, Aichi, Japan, June 15, 2011. (Poster, International)
- (1) “Ni-Catalyzed C–H/C–X Coupling of Heteroarenes”
Kei Muto, Takuya Yamamoto, Masato Komiyama, Junichiro Yamaguchi, and Kenichiro Itami
 The Chemical Society of Japan 2011, 91th Annual Meeting
 Kanagawa University, Kanagawa, Japan, March 28, 2011. (Oral)

Teaching Courses

2024 (@Waseda Univ)

1. 上級有機化学 A (Spring)
 2. 応用化学基礎演習 A(有機化学) (Spring)
 3. Introduction to Industrial Chemistry (国際コース) (Spring)
- (@Nagoya Univ)
4. 有機反応化学 (Spring)
 5. 有機化学 I (Fall)
 6. 学生実験 (Fall)

2023 (@Waseda Univ)

1. 上級有機化学 A (Spring)
2. 応用化学基礎演習 A(有機化学) (Spring)
3. Introduction to Industrial Chemistry (国際コース) (Spring)

2023 (@Waseda Univ)

1. 上級有機化学 A (Spring)
2. 応用化学基礎演習 A(有機化学) (Spring)
3. Introduction to Industrial Chemistry (国際コース) (Spring)

2022 (@Waseda Univ)

1. 上級有機化学 A (Spring)
2. 応用化学基礎演習 A(有機化学) (Spring)
3. Introduction to Industrial Chemistry (国際コース) (Spring)

2021 (@Waseda Univ)

1. 上級有機化学 A (Spring)
2. 応用化学基礎演習 A(有機化学) (Spring)
3. Introduction to Industrial Chemistry (国際コース) (Spring)

2020 (@Waseda Univ)

1. 上級有機化学 A (Spring)
2. 応用化学基礎演習 A(有機化学) (Spring)
3. Introduction to Industrial Chemistry (国際コース) (Spring)

2019 (@Waseda Univ)

1. 理工基礎実験 1A (Spring) (ナイロン合成)
2. 理工基礎実験 1B (Fall) (原子スペクトル測定)
3. 有機化学実験 (Fall) (Wittig 反応)
4. 応用化学基礎演習 A(有機化学) (Spring)
5. 応用化学基礎演習 D(物理化学) (Fall)
6. 上級有機化学 A (Spring)
7. 機器分析演習 (Fall)
8. 応用化学総論 (Spring)
9. Introduction to Industrial Chemistry (国際コース) (Spring)
10. Introduction to Applied Chemistry (国際コース) (Fall)
11. ナノスケール科学ジョイントセミナー (Spring)
12. マテリアルデザイン科学ジョイントセミナー (Spring)

2018 (@Waseda Univ)

1. 理工基礎実験 1A (Spring) (水の分析)
2. 理工基礎実験 2B (Fall) (酸化チタン合成と評価)
3. 有機化学実験 (Spring) (Wittig 反応)
4. 応用化学基礎演習 A(有機化学) (Spring)
5. 応用化学基礎演習 D(物理化学) (Spring)
6. 上級有機化学 A (Spring)
7. 機器分析演習 (Fall)
8. 応用化学総論 (Spring)
9. Introduction to Industrial Chemistry (国際コース) (Spring)
10. Introduction to Applied Chemistry (国際コース) (Fall)
11. ナノスケール科学ジョイントセミナー (Spring)
12. マテリアルデザイン科学ジョイントセミナー (Spring)

2017 (@Waseda Univ)

1. 理工基礎実験 1A (Spring) (ナイロン合成)
2. 理工基礎実験 2B (Fall) (酸化チタン合成と評価)
3. 有機化学実験 (Fall) (Wittig 反応)
4. 応用化学基礎演習 C(有機化学) (Spring)
5. 応用化学基礎演習 D(物理化学) (Spring)
6. 上級有機化学 A (Spring)
7. 機器分析演習 (Fall)
8. 応用化学総論 (Spring)
9. Introduction to Industrial Chemistry (国際コース) (Spring)
10. Introduction to Applied Chemistry (国際コース) (Fall)
11. ナノスケール科学ジョイントセミナー (Spring)
12. マテリアルデザイン科学ジョイントセミナー (Spring)

2016 (@Waseda Univ)

1. 理工基礎実験 1A (Spring) (ナイロン合成)
2. 理工基礎実験 2B (Fall) (酸化チタン合成と評価)
3. 有機化学実験 (Fall) (Wittig 反応)
4. 応用化学基礎演習 C(有機化学) (Spring)
5. 応用化学基礎演習 D(物理化学) (Spring)
6. 上級有機化学 A (Spring)
7. 機器分析演習 (Fall)
8. 応用化学総論 (Spring)
9. Introduction to Industrial Chemistry (Spring)
10. Introduction to Applied Chemistry (Fall)