

LIST OF PUBLICATIONS

* indicates co-correspondence

Preprints / Submitted Papers

143. W. M. De Vos, M. N. Trung, M. Davids, G. Liu, M. R. Morales, H. Jessen, D. Fiedler, M. Nieuwdorp, T. P. N. Bui
"Identification of Microbial Phytate Metabolism in the Human Gut and Its Relation with Host Health"
Nat. Microbiol. **2023**, under review.
142. R. Yadav, G. Liu, P. Rana, N. J. Pullagurla, D. Qiu, H. J. Jessen, D. Laha
"IPMK controls the synthesis of inositol pyrophosphate 4/6-InsP7 and heat stress acclimation in land plants"
Biorxiv **2023**, doi.org/10.1101/2023.11.17.567642
141. J. Ma, J. Wehrle, L. Lorenzen, C. Popp, D. Frank, W. Driever, R. Grosse, H. J. Jessen
"Intracellular Delivery and Deep Tissue Penetration of Nucleoside Triphosphates using Photocleavable Covalently Bound Dendritic Polycations"
Chem. Sci. **2023**, under review.
140. H. Mohsenin, J. Pacheco, T. Baumann, H. J. Wagner, N. Höfflin, S. Kemmer, A. Ripp, N. Jork, T. Bergmann, J. Timmer, H. J. Jessen, M. Köhn, W. Weber
"PenTag, a Versatile Platform for Covalent Bioconjugation, Purification, and Tagging of Proteins Towards the Development of Novel Biohybrid Material Systems."
Adv. Funct. Mater. **2023**, under review.
139. B. Haykir, S. O. Moser, E. M. Pastor-Arroyo, U. Schnitzbauer, I. Prucker, D. Qiu, D. Fiedler, A. Saiardi, H. J. Jessen, N. Hernando, C. A. Wagner
"The Ip6k1 and Ip6k2 kinases are critical for normal renal function."
J. Am. Soc. Nephrol. **2023**, under review.

Peer reviewed

138. M. Lallemand, C. O. Akintayo, C. Wenzel, W. Chen, L. Sielaff, A. Ripp, H. J. Jessen, B. Balzer, A. Walther, T. Hugel
"Hierarchical Mechanical Transduction of Precision-Engineered DNA Hydrogels with Sacrificial Bonds"
ACS Appl. Mater. Interfaces **2023**, accepted.
137. K. Dai, M. D. Pol, L. Saile, A. Sharma, B. Liu, R. Thomann, J. L. Trefs, D. Qiu, S. Moser, S. Wiesler, B. N. Balzer, T. Hugel, H. J. Jessen, C. G. Pappas
"Systems chemistry of aminoacyl phosphates: Spontaneous and selective peptide oligomerisation in water driven by phase changes."
J. Am. Chem. Soc. **2023**, doi.org/10.1021/jacs.3c07918.

136. B. Haschimi, F. Willecke, S. Mundinger, W. Hüttel, H. J. Jessen, M. Müller, V. Auwärter
"Enzymatic Defluorination of a Terminally Monofluorinated Pentyl Moiety: Oxidative or Hydrolytic Mechanism?"
FEBS J. **2023**, accepted.
135. R. P. Bennett, Y. Yoluç, J. D Salter, A. Ripp, H. J. Jessen, S. M. Kaiser, H. Smith
"Sangivamycin is Preferentially Incorporated into Viral RNA by the SARS-CoV-2 Polymerase"
Antiviral Res. **2023**, 218, 105716.
134. T. Dürr-Mayer, A. Schmidt, S. Wiesler, T. Huck, A. Mayer, H. J. Jessen
"Non-hydrolysable analogues of cyclic and branched condensed phosphates: chemistry and chemical proteomics."
Chem. Eur. J. **2023**, e202302400.
133. K. Ritter, N. Jork, A-S. Unmüssig, M. Köhn, H. J. Jessen
"Assigning the Absolute Configuration of Inositol Poly- and Pyrophosphates by NMR Using a Single Chiral Solvating Agent"
Biomolecules **2023**, 13, 1150.
132. A. M. Sanchez, B. Schwer, N. Jork, H. J. Jessen, S. Shuman
"Activities, substrate specificity, and genetic interactions of fission yeast Siw14, a cysteinyl-phosphatase-type inositol pyrophosphatase"
mBio **2023**, e02056-23.
131. V. B. Eisenbeis, D. Qiu, O. Gorka, L. Strotmann, G. Liu, I. Prucker, K. Ritter, C. Loenarz, O. Gross, A. Saiardi, H. J. Jessen
"β-Lapachone Regulates Inositol Pyrophosphate Levels in an NQO1 and Oxygen-dependent Manner."
Proc. Natl. Acad. Sci. USA **2023**, 120, e2306868120.
130. H. de Maissin, P. R. Groß, O. Mohiuddin, M. Weigt, L. Nagel, M. Herzog, Z. Wang, R. Willing, W. Reichardt, M. Pichotka, L. Heß, T. Reinheckel, H. J. Jessen, R. Zeiser, M. Bock, D. von Elverfeldt, M. Zaitsev, S. Korchak, S. Glöggler, J.-B. Hövener, E. Y. Chekmenev, F. Schilling, S. Knecht, A. B. Schmidt
"In Vivo Metabolic Imaging of [1-13C]Pyruvate-d3 Hyperpolarized By Reversible Exchange With Parahydrogen"
Angew. Chem. Int. Ed. **2023**, 62, e2023066
129. V. Chabert, G. Kim, D. Qiu, L. Michaillat Mayer, H. J. Jessen, A. Mayer
"Inositol pyrophosphate dynamics in yeast reveals control of the PHO starvation program through 1,5-IP₆ and the SPX domain of the CDK inhibitor Pho81."
eLife **2023**, accepted; BioRxiv **2023**, <https://doi.org/10.1101/2023.02.14.528555>
128. D. Qiu, E. Riemer, T. M. Haas, I. Prucker, S. Masuda, Y. L. Wang, G. Felix, G. Schaaf, H. J. Jessen
"Bacterial Pathogen Infection Triggers Magic Spot Nucleotide Signaling in Arabidopsis thaliana Chloroplasts Through Specific RelA/SpoT Homologs"

J. Am. Chem. Soc. **2023**, *145*, 16081–16089.

127. W. Liu, J. Wang, V. Comté-Miserez, M. Zhang, X. Yu, Q. Chen, H. J. Jessen, A. Mayer, S. Wu, S. Ye
"Cryo-EM structure of the polyphosphate polymerase VTC: Coupling polymer synthesis to membrane transit."
EMBO J. **2023**, e113320.
126. G. Kim, D. Qiu, H. J. Jessen, A. Mayer
"Metabolic consequences of polyphosphate synthesis and imminent phosphate limitation."
mBio **2023**, doi.org/10.1128/mbio.00102-23.
125. L. Strotmann, C. Harter, T. Gerasimova, K. Ritter, H. J. Jessen, D. Wohlwend, T. Friedrich
"H₂O₂ selectively damages the binuclear iron-sulfur cluster N1b of respiratory complex I"
Sci. Rep. **2023**, *13*, 7652.
124. P. Bencic, M. Keppler, D. Qiu, M. Häner, L. Schütte, K. Strack, H. J. Jessen, J. N. Andexer, C. Loenarz
„Non-Canonical Nucleosides: Biomimetic Triphosphorylation, Incorporation into mRNA and Effects on Translation and Structure“
FEBS J. **2023**, 10.1111/febs.16889.
123. L. Gericke, D. Mhaindarkar, L. Karst, S. Jahn, M. Kuge, M. Mohr, J. Gagsteiger, N. Cornelissen, X. Wen, S. Mordhorst, H. J. Jessen, A. Rentmeister, F. Seebeck, G. Layer, C. Lönarz, J. Andexer
„Biomimetic S-adenosylmethionine regeneration for nucleophilic and radical alkylation reactions and aminopropyltransfer“
ChemBioChem **2023**, <https://doi.org/10.1002/cbic.202300133>
122. J. Pipercevic, B. Kohl, R. Gerasimaite, V. Comte, S. Hostachy, T. Müntener, E. Agustoni, H. J. Jessen, D. Fiedler, A. Mayer, S. Hiller
"Inositol pyrophosphates activate the vacuolar transport chaperone complex by disrupting a homotypic SPX domain interaction“
Nat. Commun. **2023**, *14*, 2645.
121. N. Qin, L. Li, X. Ji, R. Pereira, Y. Chen, S. Yin, C. Li, X. Wan, D. Qiu, H. Luo, Y. Zhang, G. Dong, Y. Zhang, S. Shi, H. J. Jessen, J. Xia, Y. Chen, C. Larsson, T. Tan, Z. Liu, J. Nielsen
"Flux Regulation through Glycolysis and Respiration is Balanced by Inositol Pyrophosphates"
Cell **2023**, *186*, 748–763.
120. G. Liu, E. Riemer, R. Schneider, D. Cabuzu, O. Bonny, C. A. Wagner, D. Qiu, A. Saiardi, A. Strauss, T. Lahaye, G. Schaaf, T. Knoll, J. P. Jessen, H. J. Jessen
"The phytase RipBL1 enables the assignment of a specific inositol phosphate isomer as a structural component of human kidney stones"
RSC Chem. Biol. **2023**, DOI: 10.1039/d2cb00235c
119. M. Ito, N. Fujii, S. Kohara, S. Hori, M. Tanaka, C. Wittwer, K. Kikuchi, T. Iijima, Y. Kakimoto, K. Hirabayashi, D. Kurotaki, H. J. Jessen, A. Saiardi, E. Nagata

„Inositol pyrophosphate profiling reveals regulatory roles of IP6K2-dependent enhanced IP7 metabolism in enteric nervous system“

J. Biol. Chem. **2023**, doi.org/10.1016/j.jbc.2023.102928.

118. D. Qiu, C. Gu, G. Liu, K. Ritter, V. B. Eisenbeis, T. Bittner, L. Seidel, B. Bengsch, A. Gruzdev, S. B. Shears, H. J. Jessen
"Capillary electrophoresis mass spectrometry identifies new isomers of inositol pyrophosphates in mammalian tissues"
Chem. Sci. **2023**, 14, 658. *Biorxiv*: <https://doi.org/10.1101/2022.09.14.507917>
117. M. N. Trung, S. Kieninger, Z. Fandi, D. Qiu, G. Liu, A. Saiardi, H. J. Jessen, B. Keller, D. Fiedler
"Stable isotopomers of myo-inositol to uncover the complex MINPP1-dependent inositol phosphate network"
ACS Cent Sci **2022**, 8, 1683. *Biorxiv*: <https://doi.org/10.1101/2022.08.29.505671>
116. B. Benjamin, Y. Goldgur, N. Jork, H. J. Jessen, B. Schwer, S. Shuman
"Structures of fission yeast inositol pyrophosphate kinase Asp1 in ligand-free, substrate-bound, and product-bound states"
mBio **2022**, 13, e0308722.
115. M. Keppler, S. Moser, H. J. Jessen, C. Held, J. N. Andexer
"Make or break: the thermodynamic equilibrium of polyphosphate kinase-catalysed reactions"
Beilstein J. Org. Chem. **2022**, 18, 1278-1288.
114. E. Riemer, N. J. Pullagurla, R. Yadav, R. Priyanshi, H. J. Jessen, M. Kamleitner, G. Schaaf, D. Laha
"Regulation of plant biotic interactions and abiotic stress responses by inositol polyphosphates"
Front. Plant. Sci. **2022**, <https://doi.org/10.3389/fpls.2022.944515>
113. G. Schaaf, N. Laha, R. Giehl, E. Riemer, D. Qiu, N. Pullagurla, R. Schneider, Y. Dhir, R. Yadav, Y. Mihiret, P. Gaugler, V. Gaugler, H. Mao, N. Zheng, N. von Wirén, A. Saiardi, S. Bhattacharjee, H. J. Jessen, D. Laha
"ITPK1-Dependent Inositol Polyphosphates Regulate Auxin Responses in *Arabidopsis thaliana*."
Plant Physiol **2022**, 190, 2722.
112. P. Gaugler, R. Schneider, G. Liu, D. Qiu, J. Weber, J. Schmid, N. Jork, M. Häner, K. Ritter, N. Fernández Rebollo, R. Giehl, M. Trung, R. Yadav, D. Fiedler, V. Gaugler, H.J. Jessen, G. Schaaf, D. Laha
"Arabidopsis PFA-DSP-type phosphohydrolases target specific inositol pyrophosphate messengers"
Biochemistry **2022**, 61, 1213.
111. B. Benjamin, A. Garg, N. Jork, H. J. Jessen, B. Schwer, S. Shuman

"Activities and structure-function analysis of fission yeast inositol pyrophosphate (IPP) kinase-pyrophosphatase Asp1 and its impact on regulation of pho1 gene expression"
mBio **2022**, 13, e01034

110. T. M. Haas, B.-J. Laventie, S. Lagies, C. Harter, I. Prucker, D. Ritz, R. Saleem-Batcha, D. Qiu, W. Hüttel, J. Andexer, B. Kammerer, U. Jenal, H. J. Jessen
"Photoaffinity capture compounds to profile the Magic Spot Nucleotide interactomes "
Angew. Chem. Int. Ed. **2022**, 61, e2022017
Featured as hot paper.
109. H. Wang, L. Perera, N. Jork, G. Zong, A. M. Riley, B.V.L. Potter, H. J. Jessen, S. B. Shears
"A structural exposé of noncanonical molecular reactivity within the protein tyrosine phosphatase WPD loop."
Nat. Commun. **2022**, 13, 2231.
108. S. Shepard, H. J. Jessen*, C. C. Cummins*
"Beyond Triphosphates: Reagents and Methods for Chemical Oligophosphorylation"
J. Am. Chem. Soc. **2022**, 144, 7517-7530.
107. T. M. Haas, S. Mundinger, D. Qiu, N. Jork, K. Ritter, T. Dürr-Mayer, A. Ripp, A. Saiardi, G. Schaaf, H. J. Jessen
"Stable isotope phosphate labelling of diverse metabolites is enabled by a family of ¹⁸O-phosphoramidites"
Angew. Chem. Int. Ed. **2022**, 61,e202112457
Featured as hot paper. Selected for inside cover.
106. T. M. Haas, S. Wiesler, T. Dürr-Mayer, A. Ripp, P. Fouka, D. Qiu, H. J. Jessen
„The Aryne Phosphate Reaction“
Angew. Chem. Int. Ed. **2022**, 61, e202113231
105. Y. Desfougères, P. Portela-Torres, D. Qiu, T. M. Livermore, R. K. Harmel, F. Borghi, H. J. Jessen, D. Fiedler, A. Saiardi
„The inositol pyrophosphate metabolism of Dictyostelium discoideum does not regulate inorganic polyphosphate (polyP) synthesis.“
Adv. Biol. Regul. **2021**, doi.org/10.1016/j.jbior.2021.100835
104. B. Samper-Martín, A. Sarrias, B. Lázaro, M. Pérez-Montero, R. Ródriguez-Rodríguez, A. Bañón, D. Wolfgeher, H. J. Jessen, B. Alsina, J. Clotet, S. J Kron, A. Saiardi, J. Jiménez, S. Bru
"Polyphosphate degradation by Nudt3-Zn²⁺ mediates oxidative stress response"
Cell Reports **2021**, doi.org/10.1016/j.celrep.2021.110004.
103. H. J. Jessen*, T. Dürr, T. M. Haas, A. Ripp, C. C. Cummins
„Lost in Condensation: Poly-, Cyclo-, and Ultraphosphates“
Acc. Chem. Res. **2021**, 54, 4036.
102. M. Vranas, D. Wohlwend, D. Qiu, S. Gerhardt, C. Trncik, M. Pervaiz, K. Ritter, S. Steinle, A. Randazzo, O. Einsle, S. Günther, H. J. Jessen, A. Kotlyar, T. Friedrich
"Structural Basis for Inhibition of ROS-Producing Respiratory Complex I by NADH-OH"

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101. D. Wang, Y. Li, H. Cope, X. Li, P. He, C. Liu, G. Li, S. Rahman, N. Tooker, C. Bott, A. Onnis-Hayden, J. Singh, A. Elfick, R. Marques, H. J. Jessen, A. Oehmen, A. Gu
“Intracellular Polyphosphate Length Characterization in Polyphosphate Accumulating Microorganisms (PAOs): Implications in PAO Phenotypic Diversity and Enhanced Biological Phosphorus Removal Performance”
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100. C. Jacoby, M. Goerke, D. Bezold, H. J. Jessen, M. Boll
“A fully reversible 25-hydroxy steroid kinase involved in oxygen-independent cholesterol side-chain oxidation.”
J. Biol. Chem. **2021**, 297, 101105.
99. T. Dürr-Mayer, D. Qiu, V. Eisenbeis, N. Steck, M. Häner, A. Hofer, A. Mayer, J. Siegel, K. Baldridge, H. J. Jessen
“The Chemistry of Branched Condensed Phosphates.”
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Highlighted by the Editor of Nat. Commun. „Organic Chemistry & Chemical Biology”
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98. X. Wang, T. Bittner, M. Milanov, L. Kaul, S. Mundinger, H.G. Koch*, C. Jessen-Trefzer*, H. J. Jessen*
“Pyridinium modified anthracenes and their endoperoxides provide a tunable scaffold with activity against gram-positive and gram-negative bacteria.”
ACS Infect. Dis. **2021**, 7, 2073-2080.
97. D. Qiu*, V. B. Eisenbeis, A. Saiardi, H. J. Jessen*
“Absolute quantitation of inositol pyrophosphates by capillary electrophoresis electrospray ionization mass spectrometry”
J. Vis. Exp. **2021**, <http://dx.doi.org/10.3791/62847>
96. E. Riemer%, D. Qiu%, D. Laha, R. K. Hamel, P. Gaugler, V. Gaugler, M. Frei, M.-R. Hajirezaei, N. P. Laha, L. Krusenbaum, R. Schneider, A. Saiardi, D. Fiedler, H. J. Jessen, G. Schaaf, R. F.H. Giehl
“ITPK1 is an InsP6/ADP phosphotransferase that controls systemic phosphate signaling in Arabidopsis”
Mol. Plant **2021**, doi.org/10.1016/j.molp.2021.07.011
95. A. Moumbock, J. Li, H. Tran, R. Hinkelmann, E. Lamy, H. J. Jessen, S. Günther
“ePharmaLib: A Versatile Library of e-Pharmacophores to Address Small-Molecule (Poly-) Pharmacology”
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94. B. S. Mantilla, L. Amaral, H. J. Jessen, R. Docampo
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93. G. Zong, N. Jork, S. Hostachy, D. Fiedler, H. J. Jessen, S. B. Shears, H. Wang
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92. D. Qiu*, M. S. Wilson, V. B. Eisenbeis, R. K. Harmel, E. Riemer, T. M. Haas, C. Wittwer, N. Jork, C. Gu, S. B. Shears, G. Schaaf, B. Kammerer, D. Fiedler, A. Saiardi*, H. J. Jessen*
"Analysis of Inositol Phosphate Metabolism by Capillary Electrophoresis Electrospray Ionization Mass Spectrometry (CE-ESI-MS)"
Nature Commun. **2020**, 11, 6035.
91. J. Ma, A. Ripp, D. Wassy, T. Dürr, D. Qiu, M. Häner, T. M. Haas, C. Popp, D. Bezold, S. Richert, B. Esser, H. J. Jessen
"Thiocoumarin Caged Nucleotides: Synthetic Access and Their Photophysical Properties."
Molecules **2020**, 25, 5325.
90. Z. Wang, N. Jork, T. Bittner, H. Wang, H. J. Jessen, S. B. Shears
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85. S. Hauke, T. Bittner, H. J. Jessen*, C. Schultz*
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84. A. Ripp, J. Singh, H. J. Jessen
„Rapid Synthesis of Nucleoside Triphosphates and Analogues”

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83. C. Jacoby, S. Ferlaino, D. Bezold, H. J. Jessen, M. Müller, M. Boll
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76. J. Dong, G. Ma, L. Sui, M. Wei, V. Satheesh, R. Zhang, S. Ge, J. Li, T.-E. Zhang, C. Wittwer, H. J. Jessen, H. Zhang, G.-Y. An, D.-Y. Chao, D. Liu, M. Lei
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“The inositol hexakisphosphate kinases IP6K1 and -2 regulate human cellular phosphate homeostasis, including XPR1-mediated phosphate export.”
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