

LIST OF PUBLICATIONS

* indicates co-correspondence

Preprints / Submitted Papers

150. G. Kim, G. Liu, D. Qiu, N. Gopaldass, G. De Leo, J. Hermes, J. Timmer, A. Saiardi, A. Mayer*, H. J. Jessen*
"Pools of independently cycling inositol phosphates revealed by pulse labeling with ^{18}O -water."
Biorxiv **2024**, doi.org/10.1101/2024.05.03.592351.
149. F. Laurent, S. M. Bartsch, A. Shukla, F. E. R. Resendiz, D. Couto, C. Fuchs, J. Nicolet, S. Loubery, H. J. Jessen, D. Fiedler, M. Hothorn
"Inositol pyrophosphate catabolism by three families of phosphatases controls plant growth and development"
Biorxiv **2024**, doi.org/10.1101/2024.04.30.591831
148. N. J. Pullagurla, S. Shome, G. Liu, H. J. Jessen, D. Laha
"Orchestration of phosphate homeostasis by the ITPK1-type inositol phosphate kinase in the liverwort *Marchantia polymorpha*."
Plant Physiol. **2024**, submitted.
147. 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

Peer reviewed

146. H. Jiang, M. Milanov, G. Jüngert, L. Angebauer, C. Flender, E. Smudde, F. Gather, T. Vogel, H. J. Jessen, H.-G. Koch
"Control of a chemical chaperone by a universally conserved ATPase"
iScience **2024**, accepted.
145. X. Li, R. B. Kirkpatrick, X. Wang, C. J. Tucker, A. Shukla, H. J. Jessen, H. Wang, S. B. Shears, C. Gu
"Homeostatic coordination of cellular phosphate uptake and efflux requires an organelle-based receptor for the inositol pyrophosphate, IP₈."
Cell Reports **2024**, doi.org/10.1016/j.celrep.2024.114316.
144. D. Desmarini, G. Liu, H. J. Jessen, B. Bowring, B. Crossett, J. T. Djordjevic
"Arg1 from *Cryptococcus neoformans* lacks PI3K activity and conveys virulence roles via its IP₃₋₄-kinase activity"
Mbio **2024**, doi.org/10.1128/mbio.00608-24

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. **2024**, doi.org/10.1038/s41564-024-01698-7.
142. 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?"
Drug Metab. Dispos. **2024**, doi.org/10.1124/dmd.123.001501.
141. D. Wohlwend, L. Mérono, S. Bucka, K. Ritter, H. J. Jessen, T. Friedrich
"Structures of 3-acetylpyridine adenine dinucleotide and ADP-ribose bound to the electron input module of respiratory complex I"
Structure **2024**, doi.org/10.1016/j.str.2024.02.013.
140. 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. **2024**, doi.org/10.1681/ASN.0000000000000303.
139. J. Ma, J. Wehrle, D. Frank, L. Lorenzen, C. Popp, W. Driever, R. Grosse, H. J. Jessen
"Intracellular Delivery and Deep Tissue Penetration of Nucleoside Triphosphates using Photocleavable Covalently Bound Dendritic Polycations"
Chem. Sci. **2024**, **15**, 6478 - 6487
138. 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**, 2308269.
137. 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**, **15**, 59714.
136. 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."
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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"
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129. V. Chabert, G. Kim, D. Qiu, L. Michailat Mayer, H. J. Jessen, A. Mayer
"Inositol pyrophosphate dynamics in yeast reveals control of the PHO starvation program through 1,5-IP₈ and the SPX domain of the CDK inhibitor Pho81."
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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."

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.
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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”
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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 "
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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.”
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108. S. Shepard, H. J. Jessen*, C. C. Cummins*
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 107. T. M. Haas, S. Munding, D. Qiu, N. Jork, K. Ritter, T. Dürr-Mayer, A. Ripp, A. Saiardi, G. Schaaf, H. J. Jessen
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 106. T. M. Haas, S. Wiesler, T. Dürr-Mayer, A. Ripp, P. Fouka, D. Qiu, H. J. Jessen
 „The Aryne Phosphate Reaction“
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 105. Y. Desfougères, P. Portela-Torres, D. Qiu, T. M. Livermore, R. K. Harmel, F. Borghi, H. J. Jessen, D. Fiedler, A. Saiardi
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 “Polyphosphate degradation by Nudt3-Zn²⁺ mediates oxidative stress response”
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 „Lost in Condensation: Poly-, Cyclo-, and Ultraphosphates”
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 102. M. Vranas, D. Wohlwend, D. Qiu, S. Gerhardt, C. Trncik, M. Pervaiz, K. Ritter, S. Steimle, 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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 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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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"
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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"
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