# LIST OF PUBLICATIONS

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Preprints / Submitted Papers

146. 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.*

145. 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 $IP_{3\text{-}4}$-kinase activity"
*Mbio* **2024**, *submitted*.

144. 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

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**, *accepted.*

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**, *DOI: 10.1039/D3SC05669D.*

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. Lallemang, 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."
*J. Am. Chem. Soc.* **2023**, *doi.org/10.1021/jacs.3c07918.*

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-$IP_8$ 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

"$H_2O_2$ 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 $^{18}$O-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-$Zn^{2+}$ 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. 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"
*Angew. Chem. Int. Ed.* **2021**, *60*, 27277-27281.
*Featured as hot paper.*

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, Ri. 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”
*Water Research* **2021**, 2021090317 (doi: 10.20944/preprints202109.0317.v1).

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."
*Nat. Commun.* **2021**, *12*, 5368.
*Highlighted by the Editor of Nat. Commun. „Organic Chemistry & Chemical Biology”*
*Highlighted in C&EN News & Chemistry World*

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"
*J. Chem. Inf. Model.* **2021**, *61,* 3659-3666.

94. B. S. Mantilla, L. Amaral, H. J. Jessen, R. Docampo
„The inositol pyrophosphate biosynthetic pathway of Trypanosoma cruzi.“
*ACS Chem. Biol.* **2021**, *16*, 283-292.

93. G. Zong, N. Jork, S. Hostachy, D. Fiedler, H. J. Jessen, S. B. Shears, H. Wang
“New structural insights reveal an expanded reaction cycle for inositol pyrophosphate hydrolysis by human DIPP1.”
*FASEB J.* **2021**, *35*, e21275.

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
"Rapid stimulation of cellular Pi uptake by the inositol pyrophosphate $InsP_8$ induced by its photothermal release from lipid nanocarriers using a near infra-red light-emitting diode."
*Chem. Sci.* **2020***, 11,* 10265-10278.

89. A. C. Chin, Z. Gao, A. M. Riley, D. Furkert, C. Wittwer, A. Dutta, T. Rojas, E. R. Semenza, R. A. Felder, J. L. Pluznick, H. J. Jessen, D. Fiedler, B. V. L. Potter, S. H. Snyder, C. Fu
"The inositol pyrophosphate 5-InsP7 drives sodium-potassium pump degradation by relieving an autoinhibitory domain of PI3K p85α "
*Science Adv.*, **2020**, *6*, eabb8542

88. D. Bezold, T. Dürr, J. Singh, H. J. Jessen
" Cyclotriphosphate: A Brief History, Recent Developments, and Perspectives in Synthesis"
*Chem. Eur. J.* **2020**,*26*, 2298-2308.

87. F. Gutacker, Y.-I. Schmidt-Bohli, T. Strobel, D. Qiu, H. J. Jessen, T. Paululat, A. Bechthold

"Identification and characterization of a novel N- and O-glycosyltransferase from *Saccharopolyspora erythraea*."
*Molecules* **2020**, *25*, 3400.

86. T. M. Haas, D. Qiu, M. Häner, L. Angebauer, A. Ripp, J. Singh, H.-G. Koch, C. Jessen-Trefzer, H. J. Jessen
"Four phosphates at one blow: access to pentaphosphorylated magic spot nucleotides and their analysis by capillary electrophoresis."
Selected for Supplementary Cover
*J. Org. Chem.* **2020**, *85*, 14496-14506.

85. S. Hauke, T. Bittner, H. J. Jessen*, C. Schultz*
„Photo-releasable derivatives of inositol pyrophosphates."
*Method Enzymol.* **2020**, *641*, 53-73.

84. A. Ripp, J. Singh, H. J. Jessen
„Rapid Synthesis of Nucleoside Triphosphates and Analogues"
*Curr. Protoc. Nucleic Acid Chem.* **2020**, *81*, e108.

83. C. Jacoby, S. Ferlaino, D. Bezold, H. J. Jessen, M. Müller, M. Boll
"ATP-dependent hydroxylation of a non-activated primary carbon with water."
*Nature Commun.* **2020**, *11*, 3906.

82. T. Bittner, C. Wittwer, S. Hauke, D. Wohlwend, S. Mundinger, A. K. Dutta, D. Bezold, T. Dürr, T. Friedrich, C. Schultz*, H. J. Jessen*
"Photolysis of caged inositol-pyrophosphate $InsP_8$ directly modulates intracellular $Ca^{2+}$ oscillations and controls C2AB domain localization."
*J. Am. Chem. Soc.* **2020**, *142,* 10606–10611.

81. S. Sahu, Z. Wang, X. Jiao, C. Gu, N. Jork, C. Wittwer, X. Li, S. Hostachy, D. Fiedler, H. Wang, H. J. Jessen, M. Kiledjian, S. B. Shears
"$InsP_7$ is a small-molecule regulator of NUDT3-mediated mRNA decapping and processing-body dynamics."
*Proc. Natl. Acad. Sci. U S A* **2020**, 117, 19254–19253.

80. J. Deng, D. Bezold, H. J. Jessen, A. Walther
"Multiple Light Control Mechanisms in ATP-fueled Non-Equilibrium DNA Systems."
*Angew. Chem. Int. Ed.* **2020**,*59,*12084–12092.

79. X. Li, C. Gu, S. Hostachy, S. Sahu, C. Wittwer, H. J. Jessen, D. Fiedler, H. Wang, S. B. Shears
"Control of XPR1-dependent cellular phosphate efflux by InsP8 is an exemplar for functionally-exclusive inositol pyrophosphate signaling."
*Proc. Natl. Acad. Sci. U S A* **2020**, *117,* 3568-3574.

78. C. Azevedo, Y. Desfougeres, Y. Jiramongkol, H. Partington, S. Trakansuebkul, J. Singh, N. Steck, H. J. Jessen, A. Saiardi
"Development of a yeast model to study the contribution of vacuolar polyphosphate metabolism to lysine polyphosphorylation."

*J. Biol. Chem.* **2020***, 295*, 1439-1451.

77. J. Singh, A. Ripp, T. M. Haas, D. Qiu, M. Keller, P. A. Wender, J. S. Siegel*, K. K. Baldridge*, H. J. Jessen*
„Synthesis of modified nucleoside oligophosphates simplified: Fast, pure, and protecting group free."
*J. Am. Chem. Soc.* **2019**, *141*, 15013-15017.
S. Silverman: F1000Prime Recommendation.

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
„Inositol Pyrophosphate $InsP_8$ Acts as an Intracellular Phosphate Signal in Arabidopsis"
*Mol. Plant* **2019**, *12*, 1463-1473.

75. D. Laha, N. Parvin, A. Hofer, R. F. H. Giehl, N. Fernandez-Rebollo, N. von Wirén, A. Saiardi, H. J. Jessen, G. Schaaf
"Arabidopsis ITPK1 and ITPK2 have an Evolutionary Conserved Phytic Acid Kinase Activity."
*ACS Chem. Biol.* **2019**, *14*, 2127-2133.

74. M. S. C. Wilson, H. J. Jessen, A. Saiardi
"The inositol hexakisphosphate kinases IP6K1 and -2 regulate human cellular phosphate homeostasis, including XPR1-mediated phosphate export."
*J. Biol. Chem.* **2019**, *294,* 11597-11608.

73. W. Kim, E. Kim, H. Min, V. B. Eisenbeis, I. Pavlovic, A. K. Dutta, H. J. Jessen, S. Kim*, R. H. Seong*
"Inositol polyphosphates promote T cell-independent humoral immunity via the regulation of Bruton's tyrosine kinase."
*Proc. Natl. Acad. Sci. U S A* **2019**, *116*, 12952-12957.

72. J. Zhu, K. Lau, R. K. Harmel, R. Puschmann, L. Broger, A. K. Dutta, H. J. Jessen, L. A. Hothorn, D. Fiedler, M. Hothorn
"Two bifunctional inositol pyrophosphate kinases/phosphatases control plant phosphate homeostasis."
*eLife* **2019***, 8,* e43582*.*

71. Y. An, H. J. Jessen, H. Wang, S. Shears, D. Kireev
"Dynamics of Substrate Processing by PPIP5K2, a Versatile Catalytic Machine."
*Structure* **2019**, *27*, 1022-1028.

70. T. M. Haas, P. Ebensperger, V. B. Eisenbeis, C. Nopper, T. Dürr, N. Jork, N. Steck, C. Jessen-Trefzer, H. J. Jessen
"Magic Spot Nucleotides: Tunable Target-specific Chemoenzymatic Synthesis."
*Chem. Commun.* **2019**, *55*, 5339-5342*.*

69. A. K. Dutta, E. Choudhary, X. Wang, M. Záhorszka, M. Forbak, P. Lohner, H. J. Jessen, N. Agarwal, J. Korduláková, C. Jessen-Trefzer
"Trehalose-conjugation enhances toxicity of photosensitizers against mycobacteria."
*ACS Cent. Sci.* **2019**, *5*, 644-650*.*

68. J. Singh, N. Steck, D. De, A. Hofer, A. Ripp, I. Captain, M. Keller, P. A. Wender, R. Bhandari, H. J. Jessen
"A Phosphoramidite Analog of Cyclotriphosphate Enables Iterative Polyphosphorylations."
*Angew. Chem. Int. Ed.* **2019**, *58*, 3928-3933.

67. S. Hauke, A. K. Dutta, V. Eisenbeis, D. Bezold, T. Bittner, C. Wittwer, D. Thakor, I. Pavlovic, C. Schultz*, H. J. Jessen*
"Photolysis of cell-permeant caged inositol pyrophosphates controls oscillations of cytosolic calcium in a *β*-cell line"
*Chem. Sci.* **2019**, *10*, 2687-2692.

66. S. Mordhorst, J. Singh, M. K. F. Mohr, R. Hinkelmann, M. Keppler, H. J. Jessen*, J. N. Andexer*
"Several Polyphosphate Kinase 2 Enzymes Produce Adenosine 5'-Polyphosphates."
*ChemBioChem* **2019**, *20*, 1019-1022.

65. M. Duss, J. Vallooran, L. Salvati Manni, S. Handschin, R. Mezzenga, H. J. Jessen, E. Landau
"Palladium nanoparticles synthesized in, templated and supported by lipidic mesophases are efficient and tunable catalysts of Suzuki-Miyaura cross coupling reactions"
*Langmuir* **2019**, *35*, 120-127.

64. E. Potapenko, C. Cordeiro, G. Huang, M. Storey, C. Wittwer, A. K. Dutta, H. J. Jessen, V. J. Starai, R. Docampo
"5-Diphospho-Inositol Pentakisphosphate (5-$IP_7$) Regulates Phosphate Release from Acidocalcisomes of *Trypanosoma brucei* and Vacuoles of *Saccharomyces cerevisiae*"
*J. Biol. Chem.* **2018**, *293*, 19101-19112.

63. G. M. Fernandes-Cunha, C. McKinlay, J. Vargas, H. J. Jessen, R. Waymouth, P. A. Wender
"Delivery of Inorganic Polyphosphate into Cells using Amphipathic Oligocarbonate Transporters"
*ACS Cent. Sci.* **2018**, *4,* 1394–1402.

62. M. Ito, N. Fujii, C. Wittwer, A. Sasaki, M. Tanaka, T. Bittner, H. J. Jessen, A. Saiardi, S. Takizawa
"Hydrophilic interaction liquid chromatography-tandem mass spectrometry for the quantitative analysis of mammalian-derived inositol poly/pyrophosphates."
*J. Chromatogr. A* **2018**, *1573*, 87-97.

61. A.C. Puhl-Rubio, M.A. Stashko, H. Wang, P.B. Hardy, V. Tyagi, B. Li, X. Wang, D. Kireev, H.J. Jessen, S.V. Frye, S.B. Shears, K.H. Pearce
"Use of Protein Kinase-Focused Compound Libraries for the Discovery of New Inositol Phosphate Kinase Inhibitors."
*SLAS Discov.* **2018**, *https://doi.org/10.1177/2472555218775323.*

60. C. Azevedo, J. Singh, N. Steck, A. Hofer, T. Singh, H. J. Jessen*, A. Saiardi*
"Screening a protein array with synthetic biotinylated inorganic polyphosphate to define the human polyP-ome."
*ACS Chem. Biol.* **2018**, *13*, 1958-1963.

*(selected for "ACS Editors' Choice")*

59. H. Wang, C. Gu, R. Rolfes, H. J. Jessen, S. B. Shears
"Structural and biochemical characterization of Siw14: a protein-tyrosine phosphatase fold that metabolizes inositol pyrophosphates."
*J. Biol. Chem.* **2018**, *293*, 6905-6914.

58. V. S. Nair, C. Gu, A. K. Janoshazi, H. J. Jessen, H. Wang, S. B. Shears
"Inositol Pyrophosphate Synthesis by Diphosphoinositol Pentakisphosphate Kinase-1 is Regulated by Phosphatidylinositol(4,5)bisphosphate."
*Biosci. Rep.* **2018**, *doi: 10.1042/BSR20171549*

57. A. E. Parnell, S. Mordhorst, F. Kemper, M. Giurrandino, J. P. Prince, N. J. Schwarzer, A. Hofer, D. Wohlwend, H. J. Jessen, S. Gerhardt, O. Einsle, P. C. F. Oyston, J. N. Andexer*, P. L. Roach*
"Substrate Recognition and Mechanism Revealed by Ligand-Bound Polyphosphate Kinase 2 Structures."
*Proc. Natl. Acad. Sci. U S A,* **2018**, *115*, 3350-3355.

56. M. Duss, L. Salvati Manni, L. Moser, S. Handschin, R. Mezzenga, H. J. Jessen, E. Landau
"Lipidic mesophases as novel nanoreactor scaffolds for organocatalysts: Heterogeneously catalyzed asymmetric aldol reactions in confined water."
*ACS Appl. Mater. Interfaces*, **2018**, *10*, 5114–5124.

55. H. J. Jessen
"The Hitchhiker´s Guide to Organophosphate Chemistry."
*Synlett* **2018**, *29,* 699-713.

54. H. J. Jessen
Editorial: Phosphate Labeling and Sensing in Chemical Biology
*Topics Curr. Chem.* **2017**, *375*.

53. A. Dutta, I. Captain, H. J. Jessen
"New Synthetic Methods for Phosphate Labeling"
*Topics Curr. Chem.* **2017**, *375*, 1-48.

52. D. Blüher, D. Laha, S. Thieme, A. Hofer, L. Eschen-Lippold, A. Masch, G. Balcke, I. Pavlovic, O. Nagel, A. Schonsky, R. Hinkelmann, J. Wörner, N. Parvin, R. Greiner, S. Weber, A. Tissier, M. Schutkowski, J. Lee, H. J. Jessen*, G. Schaaf*, U. Bonas*
"A 1-Phytase Type III Effector Interferes with Plant Hormone Signaling."
*Nature Commun.* **2017**, *8*, 2159.
(Highlighted in Nature Plants)

51. C. Gu, H-N. Nguyen, D. Ganini, Z. Chen, H. J. Jessen, Z. Gu, H. Wang, S. B. Shears
"Knockout of 5-InsP7 Kinase Activity Transforms the HCT116 Colon Cancer Cell line into a Hypermetabolic, Growth-Inhibited Phenotype."
*Proc. Natl. Acad. Sci. U S A,* **2017**, *114*, 11968-11973.

50. R. Gerasimaite, I. Pavlovic, S. Capolicchio, A. Hofer, A. Schmidt, H. J. Jessen*, A. Mayer*
"Inositol pyrophosphate specificity of the SPX-dependent polyphosphate polymerase VTC."

*ACS Chem. Biol.* **2017**, *12*, 648-653.

49. C. Gu, H.-N.Nguyen, A. Hofer, H. J. Jessen, X. Dai, H. Wang, S. B. Shears
"The Significance of the Bifunctional Kinase/Phosphatase Activities of PPIP5Ks for Coupling Inositol Pyrophosphate Cell-Signaling to Cellular Phosphate Homeostasis"
*J. Biol. Chem.* **2017**, 292, 4544-4555.

48. C. Gu, M. Wilson, H. J. Jessen, A. Saiardi, S. B. Shears
"Inositol Pyrophosphate Profiling of two HCT116 Cell Lines Uncovers Variation in $InsP_8$ Levels"
*Plos ONE* **2016**, *11*, e0165286 - e0165286

47. Y. Desfougères, R. Gerasimaite, H. J. Jessen, A. Mayer
"Vtc5, a novel subunit of the vacuolar transporter chaperone complex, regulates polyphosphate synthesis and phosphate homeostasis in yeast."
*J. Biol. Chem*. **2016**, *291*, 22262 – 22275

46. A. Hofer, E. Marques, N. Kieliger, S.-K. N. Gatter, S. Jordi, E. Ferrari, M. Hofmann, T. B. Fitzpatrick, M. O. Hottiger, H. J. Jessen
"Chemoselective Dimerization of Phosphates."
*Org. Lett.* **2016**, *18*, 3222-3225.

45. A. C. Müller, R. Giambruno, J. Weißer, P. Májek, A. Hofer, J. W. Bigenzahn, G. Superti-Furga, H. J. Jessen*, K. L. Bennett *
"Identifying Kinase Substrates via a Heavy ATP Kinase Assay and Quantitative Mass Spectrometry."
*Sci. Rep.* **2016**, *6*, 28107.

44. T.-S. Lee, J.-Y. Lee, J. W. Kyung, Y. Yang, S. J. Park, S. Lee, I. Pavlovic, B. Kong, Y. S. Jho, H. J. Jessen, D.-H. Kweon, Y.-K. Shin, S. H. Kim, T.-Y. Yoon, S. Kim
"Inositol Pyrophosphates Inhibit Synaptotagmin-Dependent Exocytosis."
*Proc. Natl. Acad. Sci. U S A,* **2016**, *113, 8314-8319.*

43. R. Wild, R. Gerasimaite, J. Jung, V. Truffault, I. Pavlovic, A. Schmidt, A. Saiardi, H. J. Jessen, Y. Poirier*, M. Hothorn*, A. Mayer*
"Control of eukaryotic phosphate homeostasis by inositol polyphosphate sensor domains."
*Science* **2016**, *352*, 986-990.

42. I. Pavlovic, D. T. Thakor, H. J. Jessen
"Synthesis of 2-Diphospho-*myo*-inositol 1,3,4,5,6-Pentakisphosphate and a Photocaged Analogue."
*Org. Biomol. Chem.* **2016**, *14*, 5559 – 5562.

41. I. Pavlovic, D. T. Thakor, J. R. Vargas, C. J. McKinlay, S. Hauke, P. Anstaett, R. C. Camuna, L. Bigler, G. Gasser, C. Schultz, P. A. Wender*, H. J. Jessen*
"Cellular delivery and photochemical release of a caged inositol-pyrophosphate induces PH-domain translocation in cellulo."
*Nature Commun.* **2016**, *7, DOI:10.1038/ncomms10622*.

"Asp1 from Schizosaccharomyces pombe Binds a [2Fe-2S]$^{2+}$ Cluster Which Inhibits Inositol Pyrophosphate 1-Phosphatase Activity"
*Biochemistry* **2015**, *54,* 6462-6474.

39. I. Pavlovic, D. T. Thakor, L. Bigler, M. S. C. Wilson, D. Laha, G. Schaaf, A. Saiardi, H. J. Jessen
"Pro-Metabolites of 5-diphospho-*myo*-inositol pentakisphosphate"
*Angew. Chem. Int. Ed.* **2015**, *54*, 9622-9626.
*(Selected as "Hot Paper")*

38. A. Hofer, G. S. Cremosnik, A. C. Müller, R. Giambruno, C. Trefzer, G. Superti-Furga, K. L. Bennett, H. J. Jessen
"A Modular Synthesis of Modified Phosphoanhydrides"
*Chem. Eur. J.* **2015**, *21*, 10116-10122
*(Selected as "Very Important Paper")*

37. M. Duss, S. Capolicchio, A. Linden, N. Ahmed, H. J. Jessen
"Desymmetrization of *myo*-Inositol Derivatives by Lanthanide Catalyzed Phosphitylation with $C_2$-Symmetric Phosphites."
*Bioorg. Med. Chem.* **2015**, *23*, 2854-2861.

36. D. Laha, P. Johnen, C. Azevedo, M. Dynowski, M. Weiß, S. Capolicchio, T. Iven, M. Steenbergen, M. Freyer, P. Gaugler, M. K. F. de Campos, N. Zheng, I. Feussner, H. J. Jessen, S. C. M. Van Wees, A. Saiardi, G. Schaaf
"VIH2 controls biosynthesis of the Inositol Pyrophosphate $InsP_8$ and Regulates the Wound Response in *Arabidopsis thaliana."*
*Plant Cell* **2015**, *27*, 1082-1097.

35. S. Capolicchio, H. Wang, D. T. Thakor, S. B. Shears, H. J. Jessen
"Synthesis of densely phosphorylated bis-1,5-diphospho-*myo*-inositol tetrakisphosphate and its enantiomer by bidirectional P-anhydride formation."
*Angew. Chem. Int. Ed.* **2014**, *53*, 9508-9511.
(Highlighted in ChemBioChem)

34. M. Wu, L. S. Chong, S. Capolicchio, H. J. Jessen, A. C. Resnick, D. Fiedler
"Elucidating diphosphoinositol polyphosphate function with non-hydrolyzable analogues."
*Angew. Chem. Int. Ed.* **2014**, *53*, 7192-7197.

33. G. S. Cremosnik, A. Hofer, H. J. Jessen
"Iterative Synthesis of Nucleoside Oligophosphates with Phosphoramidites."
*Angew. Chem. Int. Ed.* **2014**, *53*, 286-289.

32. S. Benz, S. Nötzli, J. S. Siegel, H. J. Jessen, D. Eberli
"Controlled Oxygen Release From Pyridone Endoperoxides For Urologic Tissue Engineering Applications"
*J. Urol.* **2014**, *171*, E217-E218.

31. A. Hofer, H. J. Jessen
"Iterative Oligophosphate Synthesis."

*GIT Laboratory Journal* **2014**, *18*, 13-15.

30. H. J. Jessen, N. Ahmed, A. Hofer
"Phosphate Esters and Anhydrides – Recent Strategies Targeting Nature's Favoured Modifications."
*Org. Biomol. Chem.* **2014**, *12*, 3526-3530.

29. H. J. Jessen, S. Capolicchio, I. Pavlovic, D. T. Thakor
"Diphosphoinositol Polyphosphates: Polar Stars in Cell Signalling."
*Synlett* **2014**, *25*, 1494-1498.

28. S. Benz, S. Nötzli, J. S. Siegel, D. Eberli, H. J. Jessen
"Controlled oxygen release from pyridone endoperoxides promotes cell survival under anoxic conditions."
*J. Med. Chem.* **2013**, *56*, 10171-10182.

27. S. Capolicchio, D. T. Thakor, A. Linden, H. J. Jessen
"Synthesis of Unsymmetric Diphosphoinositol Polyphosphates."
*Angew. Chem. Int. Ed.* **2013**, *52*, 6912-6916.
(Highlighted in Chimia and ChemBioChem)

26. S. Kath-Schorr, H. J. Jessen
"16. Steinheimer Gespräche"
*Nachrichten aus der Chemie* **2013**.

25. F. Schoenebeck, H. J. Jessen
"The 48$^{th}$ EUCHEMS Conference on Stereochemistry (Bürgenstock Conference 2013)."
*Chimia* **2013**, *67*, 671.

## Postdoctoral & Doctoral Studies

24. A. Chicca, R. Berg, H. J. Jessen, N. Marck, F. Schmid, P. Burch, J. Gertsch, K. Gademann
"Biological Evaluation of Pyridone Alkaloids on the Endocannabinoid System"
*Bioorg. Med. Chem.* **2017**, *25*, 6102-6114.

23. C. Meier, H. J. Jessen, T. Schulz, L. Weinschenk, J. Balzarini
"Nucleoside Diphosphate Prodrugs"
*Curr. Med. Chem.* **2015**, *22*, 3933-3950.

22. F. Schmid, M. Bernasconi, H. J. Jessen, A. Pfaltz, K. Gademann
"Catalytic Enantioselective Total Synthesis of (-) Pyridovericin."
*Synthesis* **2014**, *46*, 864-870.

21. R. Liffert, J. Hoecker, C.K. Jana, T. M. Woods, P. Burch, H. J. Jessen, M. Neuburger, K. Gademann
"Withanolide A: Synthesis and Structural Requirements for Neurite Outgrowth."
*Chem. Sci.* **2013**, *4*, 2851-2857.

20. F. Schmid, H. J. Jessen, P. Burch, K. Gademann

"Truncated Militarinone Fragments Identified by Total Chemical Synthesis Induce Neurite Outgrowth."
*Med. Chem. Comm.* **2013**, *4*, 135-139.

19. H. J. Jessen, A. Schumacher, F. Schmid, A. Pfaltz, K. Gademann
"Catalytic Enantioselective Total Synthesis of (+)-Torrubiellone C."
*Org. Lett.* **2011**, *13*, 4368-4370.

18. C. K. Jana, J. Hoecker, T. M. Woods, H. J. Jessen, M. Neuburger, K. Gademann
"Synthesis of Withanolide A, Biological Evaluation of its Neuritogenic Properties and Studies on Secretase Inhibition."
*Angew. Chem. Int. Ed.* **2011**, *50*, 8407-8411.

17. H. J. Jessen, A. Schumacher, T. Shaw, A. Pfaltz, K. Gademann
"A Unified Approach for the Stereoselective Synthesis of Pyridone Alkaloids and their Neuritogenic Activity."
*Angew. Chem. Int. Ed.* **2011**, *50*, 4222-4226.

16. H. J. Jessen, K. Gademann
"4-Hydroxy-2-Pyridone Alkaloids: Structures and Synthetic Approaches."
*Nat. Prod. Rep.* **2010**, *27*, 1168-1185.

15. H. J. Jessen, K. Gademann
"Total Synthesis of the Marine Alkaloid Palau'amine." (Highlight)
*Angew. Chem. Int. Ed.* **2010**, *49*, 2972-2974.

14. H. J. Jessen, D. Barbaras, M. Hamburger, K. Gademann; "Total Synthesis and Neuritotrophic Activity of Farinosone C."
*Org. Lett.* **2009**, *11*, 3446-3449.

13. T. Schulz, H. J. Jessen, J. Balzarini, C. Meier
"Bioreversible Protection of Nucleosidediphosphates - Synthesis and Properties."
*Antiviral Res.* **2009**, *82*, A63.

12. H. J. Jessen, T. Schulz, J. Balzarini, C. Meier
"Bioreversible Protection of Nucleoside Diphosphates."
*Angew. Chem. Int. Ed.* **2008**, *47*, 8719-8722. (Highlighted in Welt online)

11. C. Meier, H. J. Jessen, J. Balzarini
"Nucleoside Diphosphate Prodrugs."
*Nucleic Acids Symp. Ser.* **2008**, *52*, 83-84.

10. H. J. Jessen, J. Balzarini, C. Meier
"Intracellular Trapping of *cyclo*Sal-Pronucleotides: Modification of Prodrugs with Amino Acid Esters."
*J. Med. Chem.* **2008***, 51,* 6592-6598.

9. C. Meier, H. Jessen, N. Gisch, J. Balzarini
"Enzyme-triggered *cyclo*Sal-Pronucleotides."
*Antiviral Res.* **2008**, *78*, A26.

8. H. J. Jessen, J. Balzarini, C. Meier

"Properties of Aminoacid Esters Linked to *cyclo*Sal-Pronucleotides."
*Antiviral Res.* **2007**, *74*, A73.

7. H. J. Jessen, V. Tonn, C. Meier
"Intracellular Trapping of cycloSal-Pronucleotides by Enzymatic Cleavage."
*Nucleos. Nucleot. Nucl.* **2007**, *26*, 827.

6. H. J. Jessen, W. Fendrich, C. Meier
"Synthesis and Properties of Fluorescent *cyclo*Sal-Nucleotides Based on the Pyrimidine Nucleoside m5K."
*Eur. J. Org. Chem.* **2006**, 924-931.

5. C. Meier, C. Ducho, H. J. Jessen, D. Vukadinovic-Tenter, J. Balzarini
"Second Generation *cyclo*Sal-d4TMP Pronucleotides Bearing Esterase-Cleavable Sites - The Trapping-Concept."
*Eur. J. Org. Chem.* **2006**, 197-206.

4. H. J. Jessen, W. Fendrich, T. Schulz, J. Balzarini, C. Meier
"Synthesis and Properties of Intrinsically Fluorescent cycloSal-Pronucleotides."
*Antiviral Res.* ***2006****, 70,* A60.

3. C. Meier, C. Ducho, H. J. Jessen, J. Balzarini
"Esterase-Cleavable cycloSal-Pronucleotides - The Trapping Concept."
*Coll. Cech. Chem. Commun. (Symp. Series)* **2005**, 105-114.

## Patents

2. H. J. Jessen, C. Meier; *International Patent* - Nr. PCT/DE2009/000550
1. H. J. Jessen, C. Meier; *German Patent* - Nr. DE 10 2008 020 633.4