

Poland

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Please describe any new experimental resources and/or software tools available to Arabidopsis researchers that have been initiated or funded in your country in 2020 or early 2021

Polish researchers Hanna Cwiek-Kupczynska and Pawel Krajewski were involved in the preparation of the new version of a metadata standard for the documentation of phenotyping datasets. MIAPPE 1.1 structures the metadata (which may consist of images, other binary data, tabular files, etc.).

The new MIAPPE 1.1 standard also provides the opportunity to store environmental conditions data. The work has been published this year in the *New Phytologist*: Papoutsoglou, E.A., Faria, D., Arend, D., Arnaud, E., Athanasiadis, I.N., Chaves, I., Coppens, F., Cornut, G., Costa, B.V., Cwiek-Kupczynska H., Driesbeke, B., Finkers, R., Gruden, K., Junker, A., King, G.J., Krajewski, P., Lange, M., Laporte, M.-A., Michotey, C., Oppermann, M., Ostler, R., Poorter, H., Ramirez-Gonzalez, R., Ramsak, Z., Reif, J.C., Rocca-Serra, P., Sansone, S.-A., Scholz, U., Tardieu, F., Uauy, C., Usadel, B., Visser, R.G.F., Weisse, S., Kersey, P.J., Miguel, C.M., Adam-Blondon, A.-F. and Pommier, C. (2020) Enabling reusability of plant phenomic datasets with MIAPPE 1.1. *New Phytologist*, 227, 260-273.

Please provide a paragraph describing the general impact of the COVID19 pandemic on the scientific community in your country

Due to the COVID19 pandemic schools and universities in Poland switched to remote learning mode. Shift work or remote systems of work have been implemented in Polish research institutes. The international mobility of scientists has significantly decreased, and many projects that included tasks to be performed in cooperation with groups from outside of Poland have been delayed. All these aspects significantly hampered the progress of experimental work. It is remarkable that most meetings (including internal meetings, lab meetings etc.) and conferences are held remotely. This has its pros and cons. An obvious positive aspect is the possibility of participating in large international conferences without the need to cover high travel and accommodation costs. However, it remains an open question to what extent does an on-line conference compares to on-site conferences? So far in these difficult conditions, scientists in Poland have continued their work, carry out projects and publish. Let us hope that the difficult time will pass and we will be able to work at full steam again.

Planned events for 2021 and 2022

- 10th Polish Society of Experimental Biology (PSEB) Conference; Katowice, Poland; September 20–23, 2021 (virtual)[<https://ptber.org.pl/default/en/conferences/10th-conference/>]
- 2nd National Conference on the Anatomy and Histology of Plants organized by the Polish Botanical Society (PBS); September 7-8, 2021 (virtual)[<https://pbsociety.org.pl/default/ii-krajowa-konferencja-anatomia-i-histogeneza-roslin-dzis-i-jutro-7-8-09-2021-r-zgloszenia/>]

• Plant Applied Genetics- challenges of the XXI century, 22-24 September 2021, Warsaw [<http://kghibr.sggw.pl/genetyka2021/>]

Selected Publications

- Bhat, S.S., Bielewicz, D., Gulanicz, T., Bodi, Z., Yu, X., Anderson, S.J., Szewc, L., Bajczyk, M., Dolata, J., Grzelak, N., Smolinski, D.J., Gregory, B.D., Fray, R.G., Jarmolowski, A. and Szweykowska-Kulinska, Z. (2020) mRNA adenosine methylase (MTA) deposits m6A on pri-miRNAs to modulate miRNA biogenesis in *Arabidopsis thaliana*. *Proceedings of the National Academy of Sciences*, 117, 21785-21795

The authors found that mRNA adenosine methylase (MTA) co-transcriptionally introduces m6A into a set of *A. thaliana* miRNA precursors stimulating their biogenesis via interactions with early-stages miRNA biogenesis protein

Tgh, affecting pri-miRNA secondary structure and in consequence enhancing recruitment of Microprocessor to pri-miRNAs.

- Pastorczyk, M., Kosaka, A., Pislewska-Bednarek, M., Lopez, G., Frerigmann, H., Kulak, K., Glawischnig, E., Molina, A., Takano, Y., and Bednarek, P. (2020). The role of CYP71A12 monooxygenase in pathogen-triggered tryptophan metabolism and Arabidopsis immunity. *New Phytologist*, 225, 400-412.

The authors provide new insights into pathogen-triggered changes in tryptophan metabolism; they describe the role of the CYP71A12 monooxygenase in the biosynthesis of indole_3_carboxylic acid (ICA) and the consequence of the disturbance of this regulatory module to defense response in Arabidopsis.

- Zmienko, A., Marszalek-Zenczak, M., Wojciechowski, P., Samelak-Czajka, A., Luczak, M., Kozlowski, P., Karlowski, W.M. and Figlerowicz, M. (2020) AthCNV: A Map of DNA Copy Number Variations in the Arabidopsis Genome. *The Plant Cell*, 32, 1797-1819

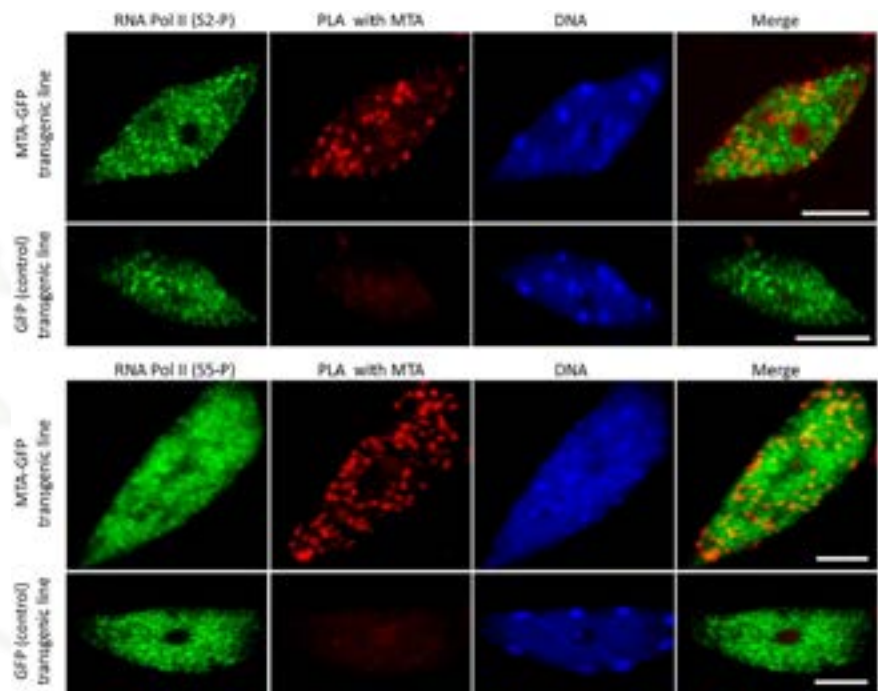
Based on the analysis of short-read sequencing data released by the 1001 Genomes Consortium, Zmienko *et al.* created a comprehensive atlas of copy number variations (CNVs) and large indels in the Arabidopsis genome, showed the impact of local genomic context (e.g. CNV overlap with genes and transposable elements) on CNV distribution and demonstrated the usefulness of gene-associated CNVs as markers for population structure analysis and genome-wide association studies.

Major Funding Sources

NCN National Science Centre Poland [www.ncn.gov.pl]

NCN supports basic research in Poland.

In 2020 projects using Arabidopsis as a model received apr. €3,270,358



PLA shows the interaction between MTA and RNA Pol II phosphorylated at Serine 2 and Serine 5. Positive PLA signals (red spots in the second column) can be seen only in cells containing the MTA-GFP transgene, but not in control cells expressing GFP alone. RNA Pol II is represented in green. DNA is stained with HOECHST (blue). (Scale bars, 5 μ m.)