

Genetické modifikácie a biotechnológia

Modul č. 1: Genetika živočíchov

Radoslav Židek

Slovenská poľnohospodárska univerzita v Nitre

Fakulta biotechnológie a potravinárstva

Erasmus+ project 2021-1-SK01-KA220-HED-000032068



Co-funded by
the European Union

Obsah

Vznik technológie

Ako to funguje

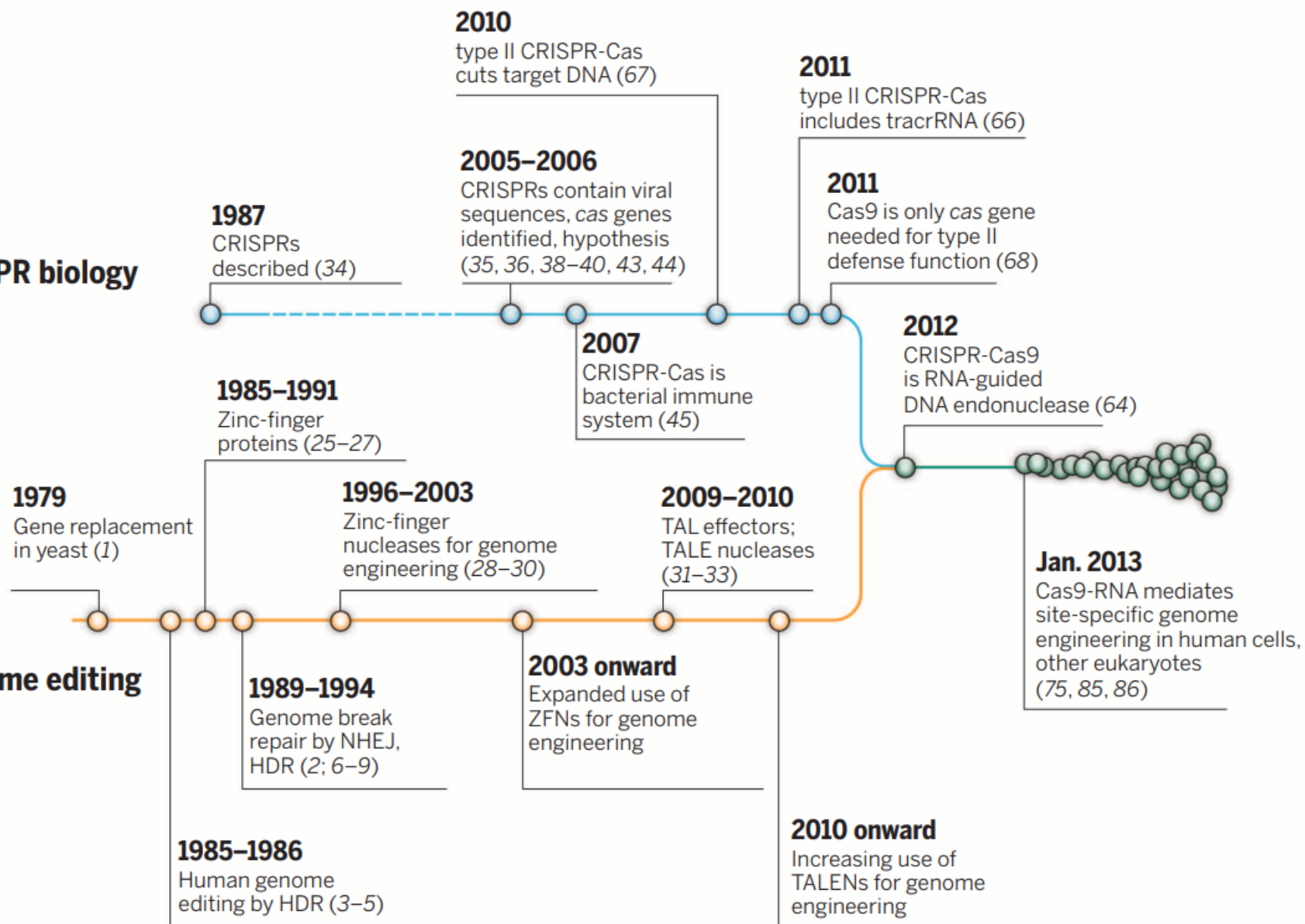
Ako to použiť



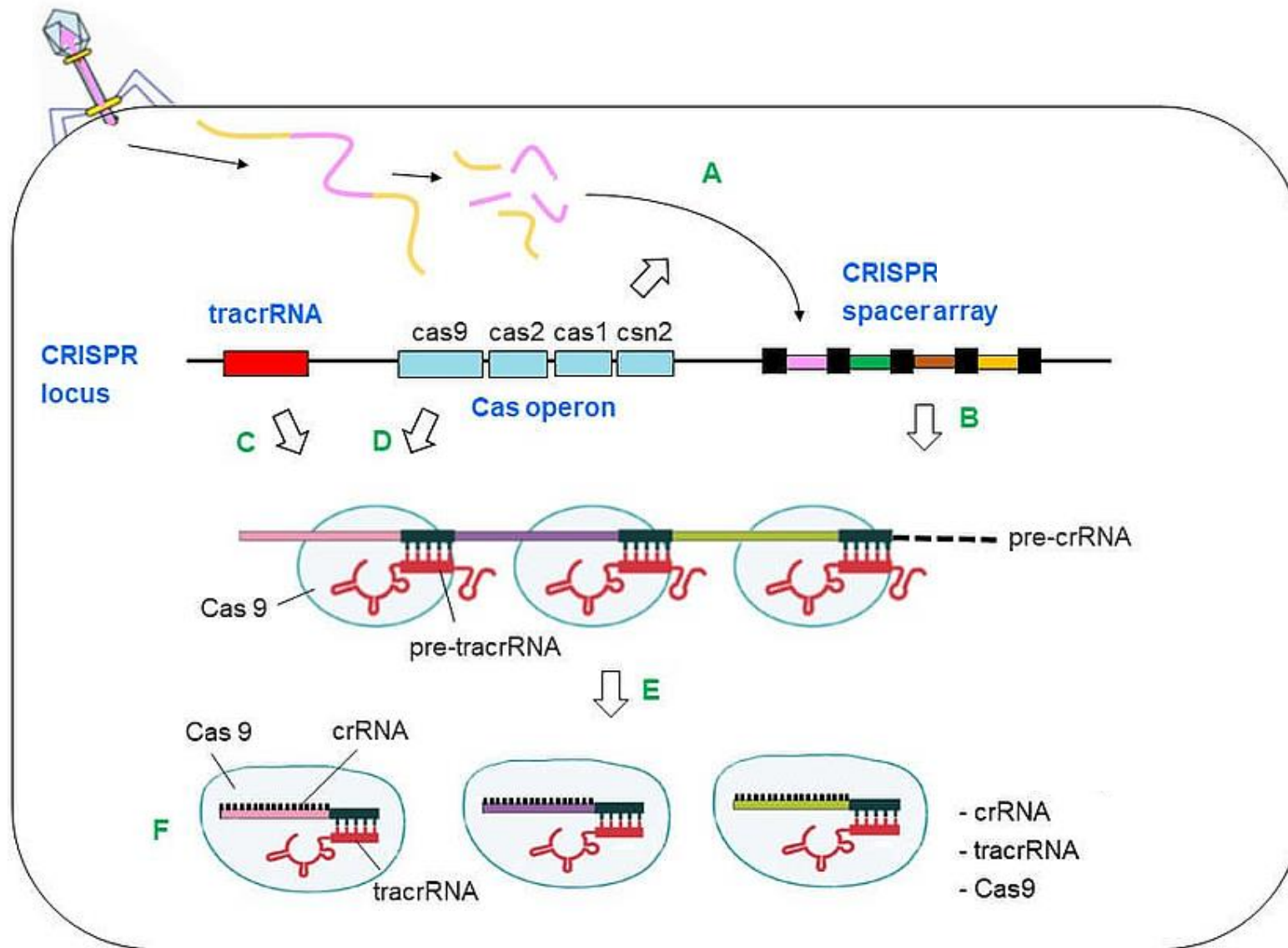
Co-funded by
the European Union

CRISPR biology

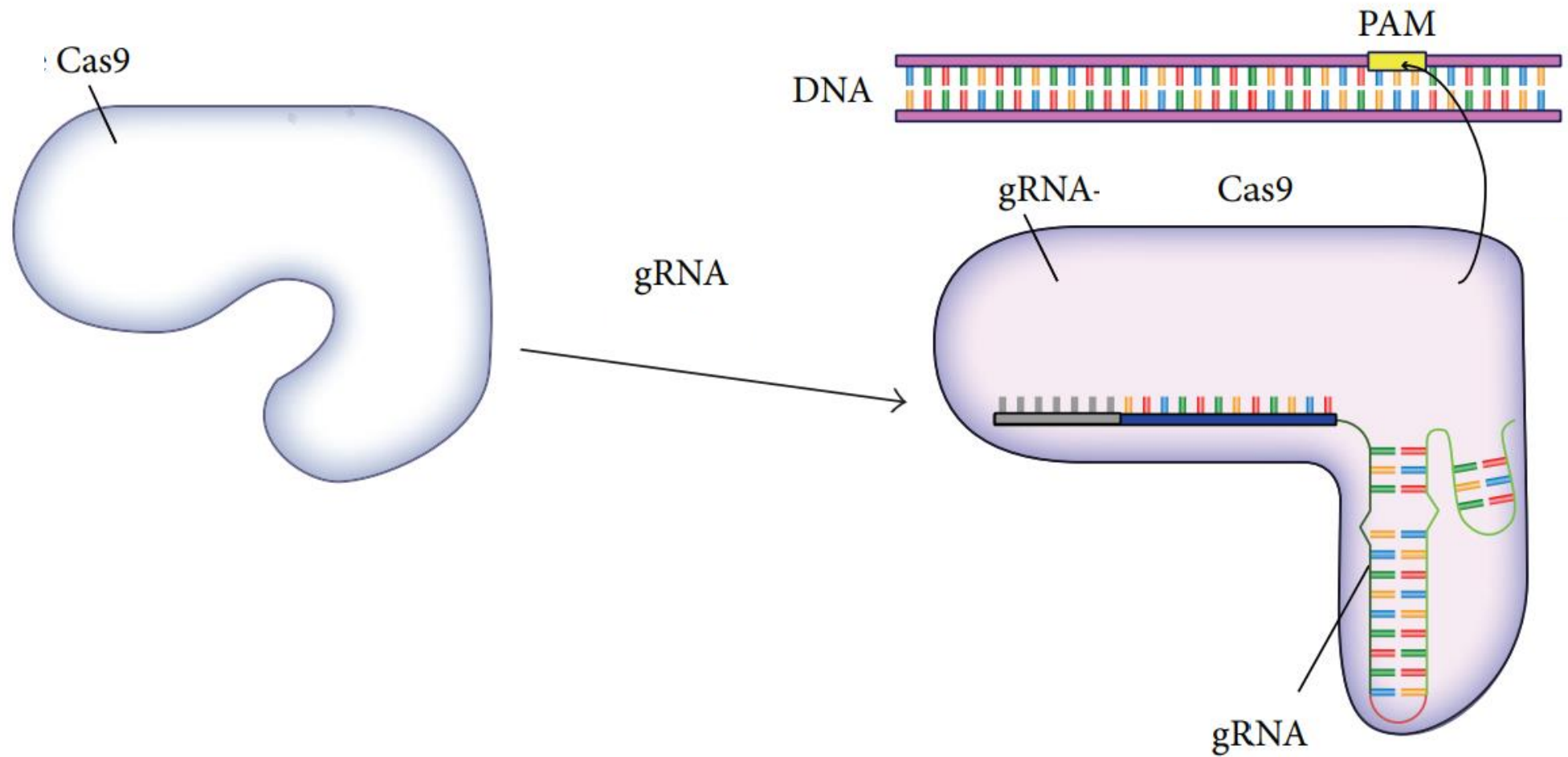
Genome editing



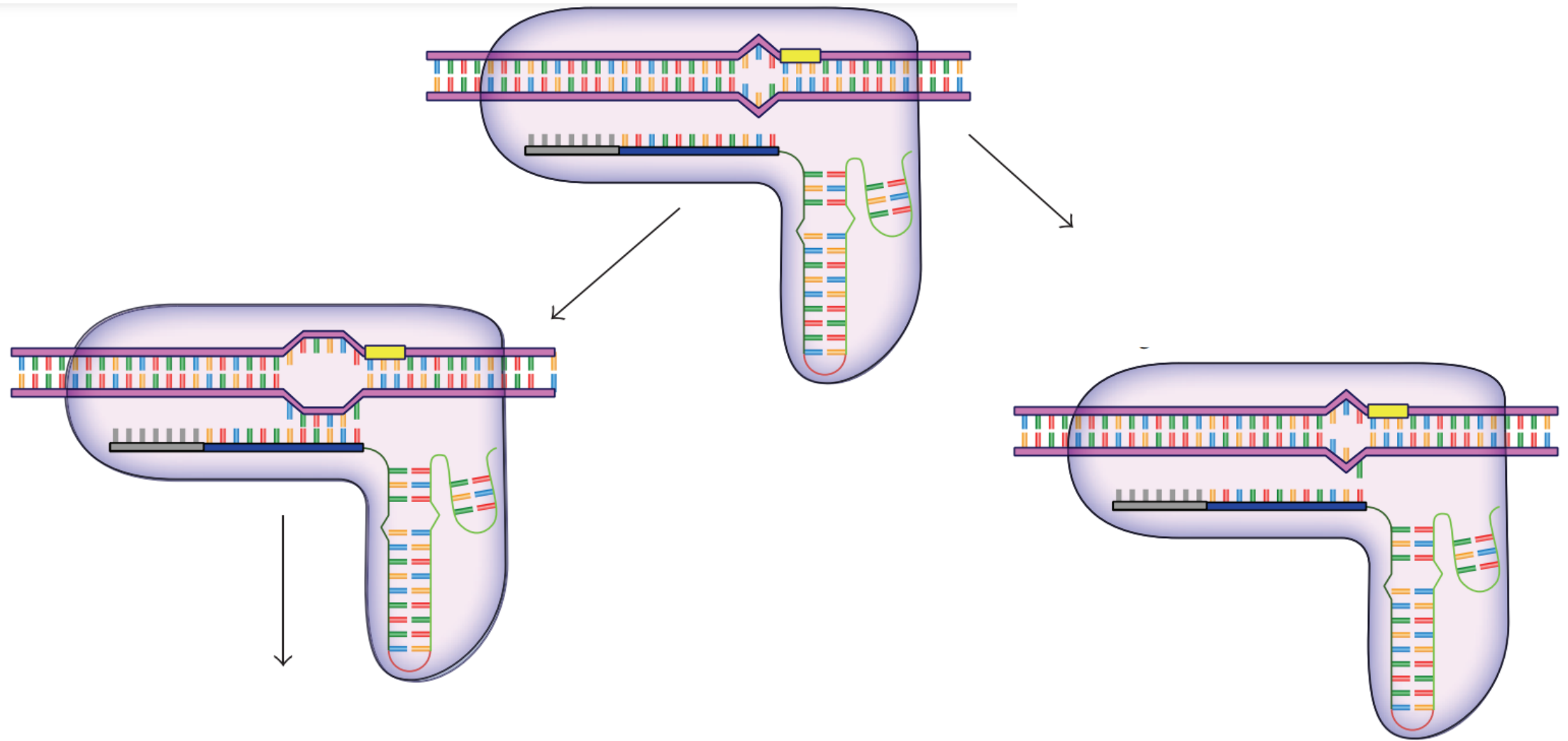
Zdroj: Doudna, J. A., & Charpentier, E. (2014). *The new frontier of genome engineering with CRISPR-Cas9*. *Science*, 346(6213), 1258096–1258096. doi:10.1126/science.1258096



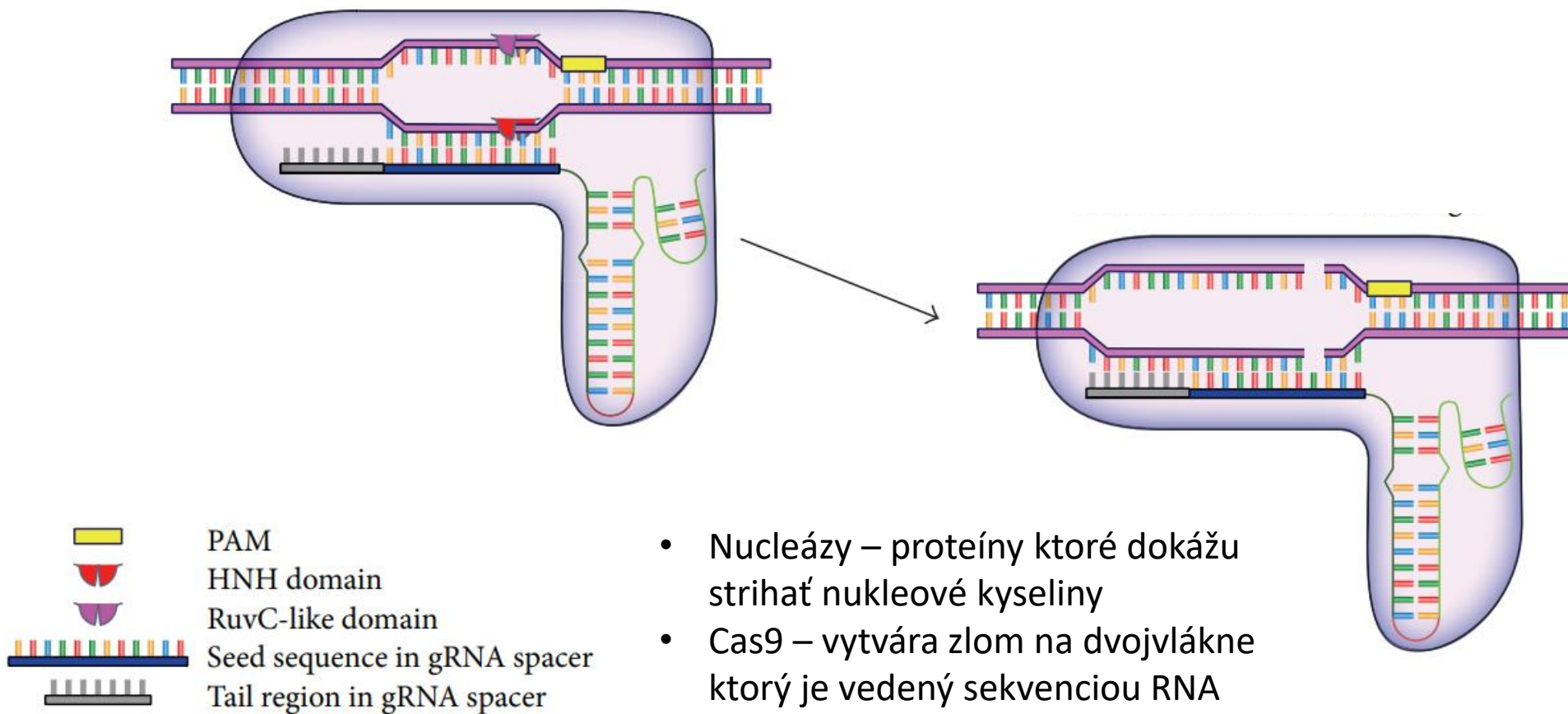
Zdroj: Doudna, J. A., & Charpentier, E. (2014). *The new frontier of genome engineering with CRISPR-Cas9*. *Science*, 346(6213), 1258096–1258096. doi:10.1126/science.1258096



Zdroj: Bing Shui, Liz Hernandez Matias, Yi Guo, Ying Peng, "The Rise of CRISPR/Cas for Genome Editing in Stem Cells", *Stem Cells International*, vol. 2016, Article ID 8140168, 17 pages, 2016.
<https://doi.org/10.1155/2016/8140168>



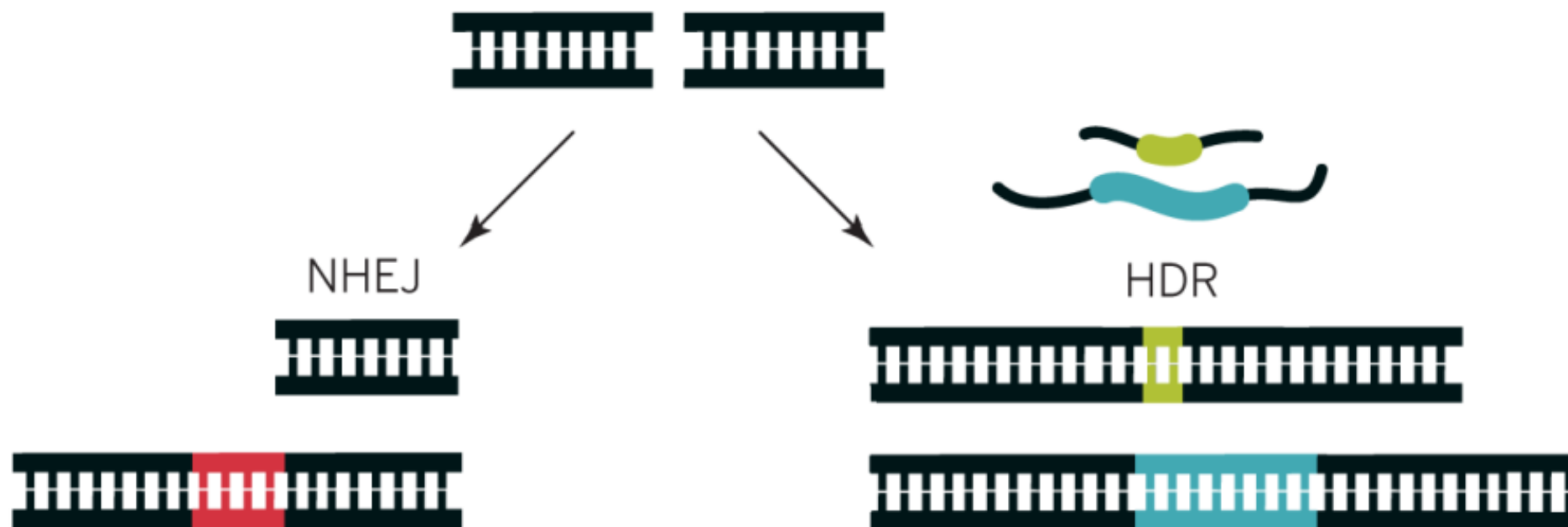
Zdroj: Bing Shui, Liz Hernandez Matias, Yi Guo, Ying Peng, "The Rise of CRISPR/Cas for Genome Editing in Stem Cells", *Stem Cells International*, vol. 2016, Article ID 8140168, 17 pages, 2016.
<https://doi.org/10.1155/2016/8140168>



- Nucleázy – proteíny ktoré dokážu strihať nukleové kyseliny
- Cas9 – vytvára zlom na dvojvlákne ktorý je vedený sekvenciou RNA lokusu CRISPR

Zdroj: Bing Shui, Liz Hernandez Matias, Yi Guo, Ying Peng, "The Rise of CRISPR/Cas for Genome Editing in Stem Cells", *Stem Cells International*, vol. 2016, Article ID 8140168, 17 pages, 2016.
<https://doi.org/10.1155/2016/8140168>

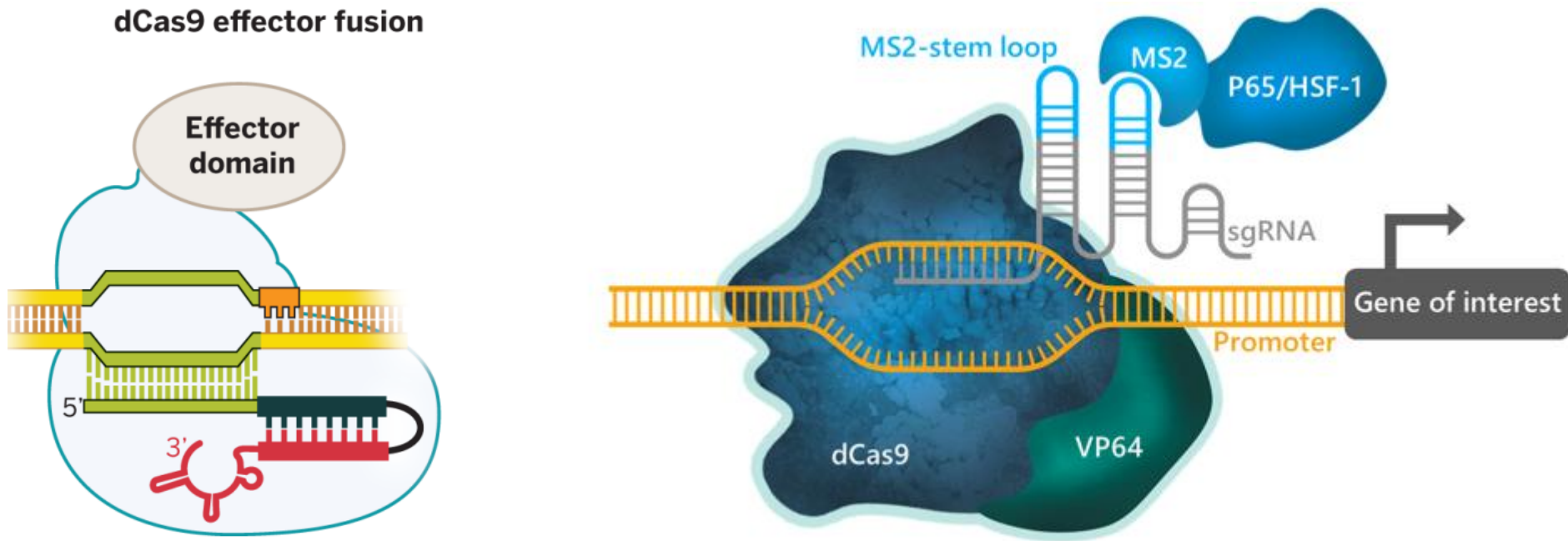
Dvojreťazcový zlom DNA sgRNA-Cas9



Narušenie génu pomocou malej
inzercie alebo delécie

Génová korekcia alebo inzercia
použitím asistovanej rekombinácie

Tissue-specific activation of gene expression by the Synergistic Activation Mediator (SAM)

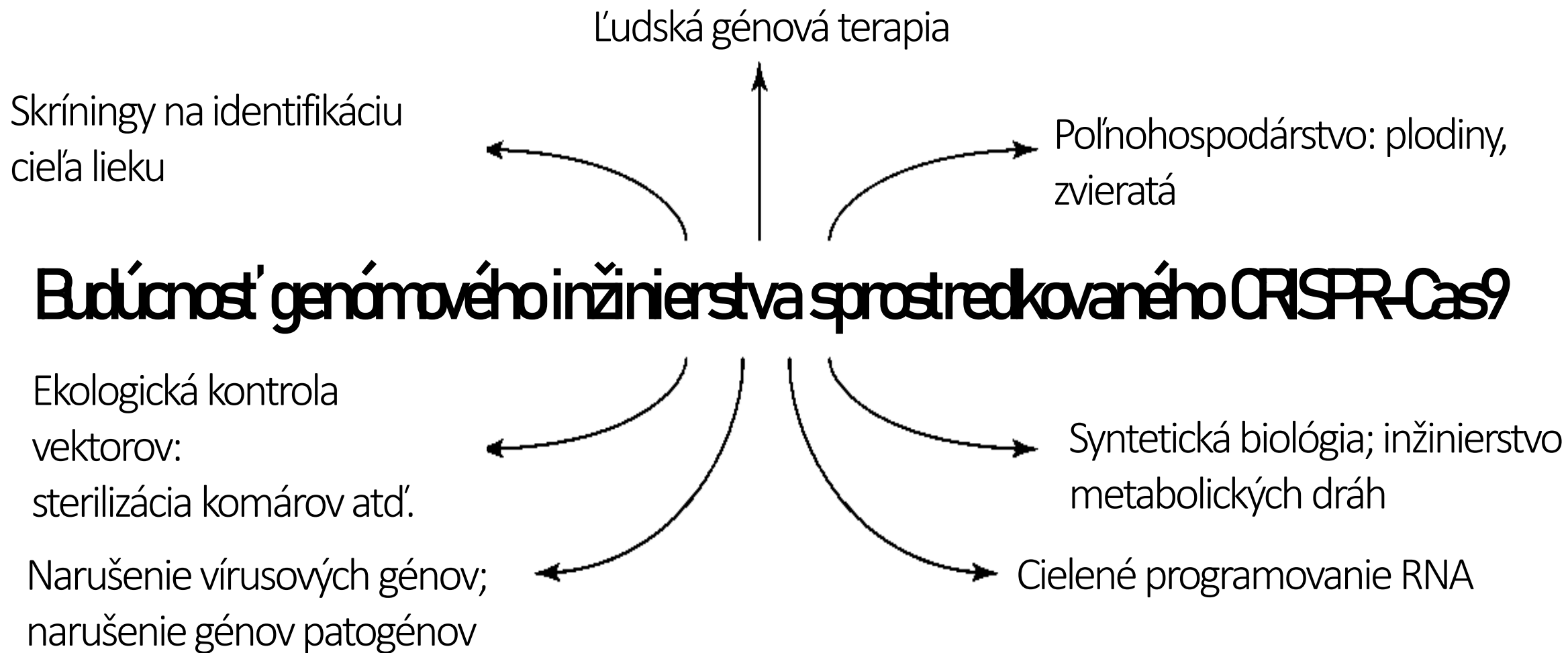


Zdroj: Doudna, J. A., & Charpentier, E. (2014). The new frontier of genome engineering with CRISPR-Cas9. Science, 346(6213), 1258096–1258096. doi:10.1126/science.1258096

Erasmus+ project 2021-1-SK01-KA220-HED-000032068



Co-funded by
the European Union



Zdroj: Doudna, J. A., & Charpentier, E. (2014). The new frontier of genome engineering with CRISPR-Cas9. Science, 346(6213), 1258096–1258096. doi:10.1126/science.1258096

Erasmus+ project 2021-1-SK01-KA220-HED-000032068



Co-funded by
the European Union

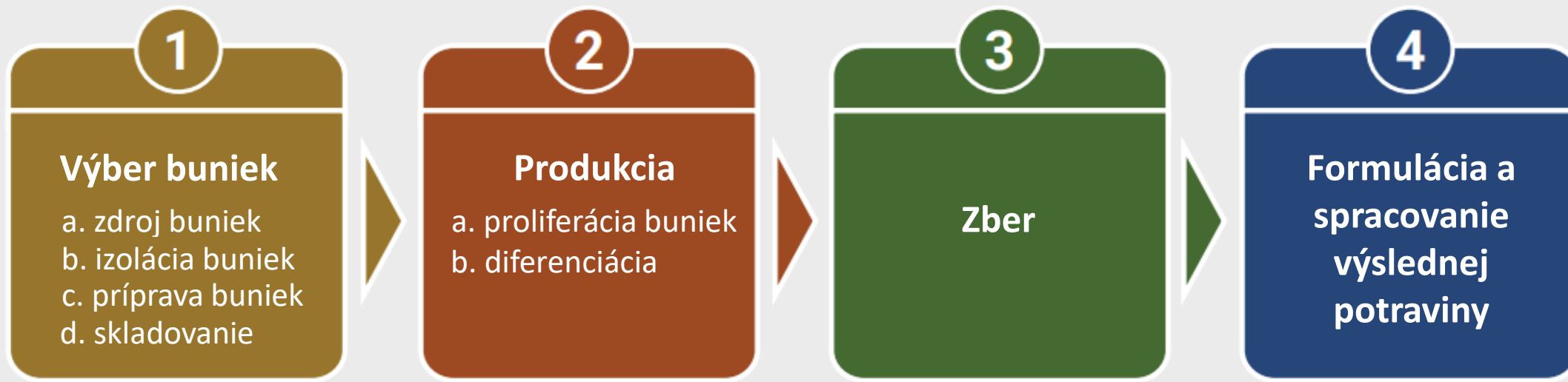
CELL-BASED FOOD



Zdroj: <https://www.fao.org/3/cc4855en/cc4855en.pdf>

Genetický prehľad procesu výroby potravín na báze buniek

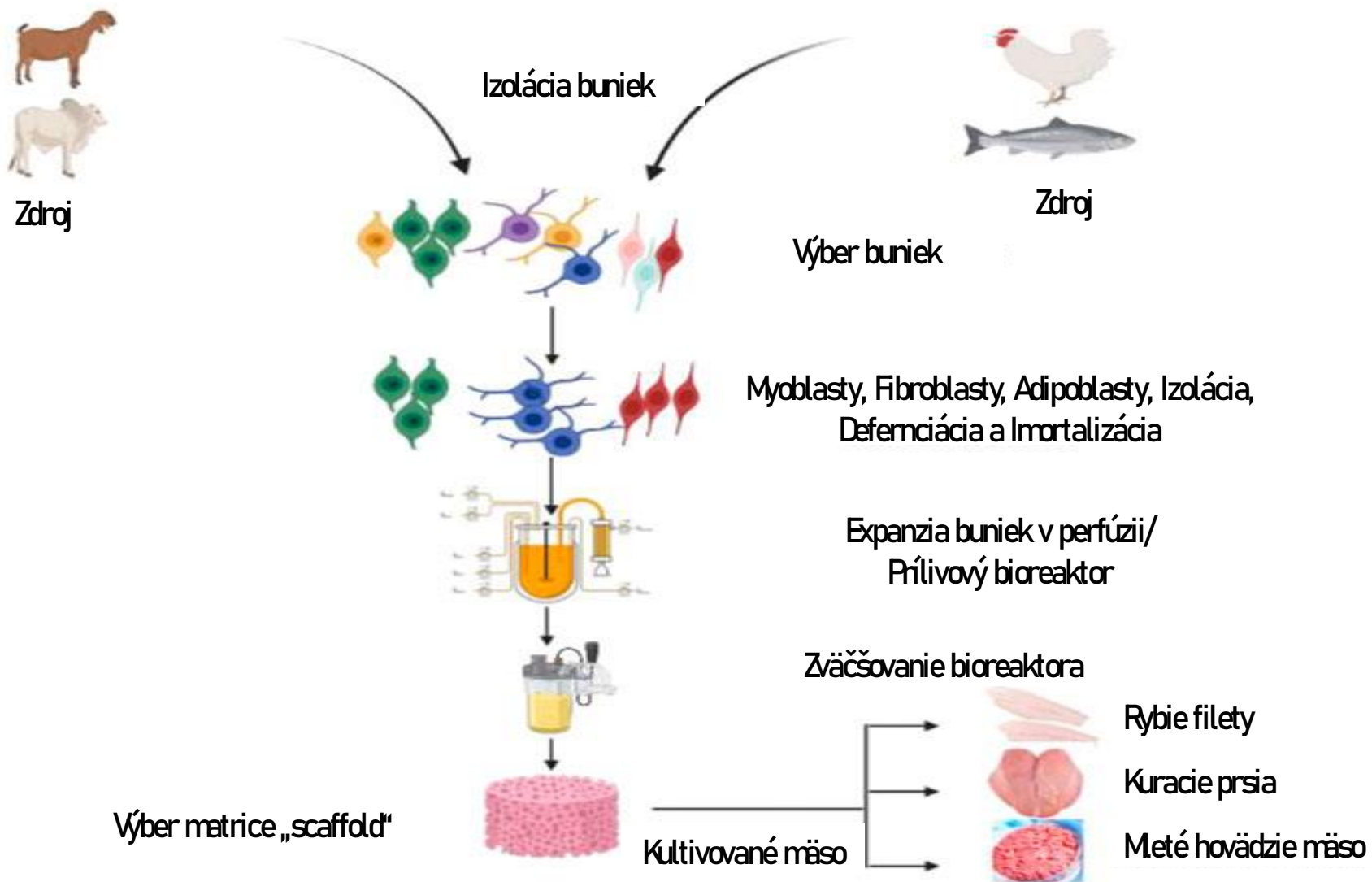
ISAGREED



Source: FAO. 2022. Thinking about the future of food safety - A foresight report. Rome. www.fao.org/3/cb8667en/cb8667en.pdf



Co-funded by
the European Union



Zdroj: Azhar, Asim & Zeyauallah, Md & Bhunia, Shushruta & Kacham, Santhosh & Patil, Girish & Muzammil, Khursheed & Khan, Mohammad & Sharma, Sandeep. (2023). Cell-based meat: The molecular aspect. Frontiers in Food Science and Technology. 3. 10.3389/frfst.2023.1126455.

- Texturovaný sójový proteín (TSP)
- Technológia bunkových listov
- Mikronosiče



Zdroj:

<https://www.fortunechina.com/detail/company/impact/2022/49/shanghaishiweishen-gwukeyiyouxiangongsi.htm>



Zdroj: <https://www.steakholderfoods.com/blog/worlds-largest-lab-grown-steak-unveiled-by-israeli-firm>



Siedlce University
of Natural Sciences
and Humanities



Czech University
of Life Sciences Prague

Partners:



Ďakujem za vašu pozornosť!

This presentation has been supported by the Erasmus+ KA2 Cooperation Partnerships grant no. 2021-1-SK01-KA220-HED-000032068 "Innovation of the structure and content of study programs in the field of animal genetic and food resources management with the use of digitalisation - Inovácia obsahu a štruktúry študijných programov v oblasti manažmentu živočíšnych genetických a potravinových zdrojov s využitím digitalizácie". The European Commission support for the production of this presentation does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Radoslav Židek



radoslav.zidek@uniag.sk



Co-funded by
the European Union