Charakteristika predkladaného výstupu tvorivej činnosti / Characteristics of the submitted research/ artistic/other output

Tlačivo VTC slúži na predkladanie výstupov tvorivej činnosti podľa metodiky hodnotenia tvorivých činností (časť V. Metodiky na vyhodnocovanie štandardov) / The form is used to submit the research/artistic/other outputs according to the evaluation methodology of research/artistic/other activities (part V. The Methodology for Standards Evaluation).

ID konania/ID of the procedure: [1] Kód VTC/Code of the research/artistic/other output (RAOO):[1]	

OCA1. Priezvisko hodnotenej osoby / Surname awarded to the assessed person [2]		Mihálik
OCA2. Meno hodnotenej osoby / Name awarded to the assessed person [2]		Daniel
OCA3. Tituly hodnotenej osoby / Degrees awarded to the assessed person [2]		Docent/ Associate Professor
OCA4. Hyperlink na záznam osoby v Registri zamestnancov vysokých škôl / Hyperlink to the entry of the person in the Register of university staff [3]		https://www.portalvs.sk/regzam/detail/10269
OCA5. Oblasť posudzovania / Area of assessment [4]		4. Biotechnológie/ 4. Biotechnology
OCA6. Kategória výstupu tvorivej činnosti / Category of the research/ artistic/other output *Výber zo 6 možností (pozri Vysvetlivky k položke OCA6) / Choice from 6 options (see Explanations for OCA6).*		Vedecký výstup/ scientific output
OCA7. Rok vydania výstupu tvorivej činnosti / Year of publication of the research/artistic/other output		2020
OCA8. ID záznamu v CREPČ alebo CREUČ *(ak je)* / ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA) [5]		214538
OCA9. Hyperlink na záznam v CREPČ alebo CREUČ / Hyperlink to the record in CRPA or CRAA [6]		https://app.crepc.sk/?fn=detailBiblioFormChildI1G9CA&sid=3CC7C8A2F9DA363A07D00D5FC5&seo=CREP%C4%8C-detail-%C4%8Cl%C3%A1nok
Charakteristika výstupu, ktorý nie je registrovaný v CREPČ alebo CREUČ / Characteristics of the output that is not registered in CRPA	OCA10. Hyperlink na záznam v inom verejne prístupnom registri, katalógu výstupov tvorivých činností / Hyperlink to the record in another publicly accessible register, catalogue of research/ artistic/other outputs [7]	https://www.mdpi.com/2223-7747/9/5/667/htm
	OCA11. Charakteristika výstupu vo formáte bibliografického záznamu CREPČ alebo CREUČ, ak výstup nie je vo verejne prístupnom registri alebo katalógu výstupov / Characteristics of the output in the format of the CRPA or the CRAA bibliographic record, if the output is not available in a publicly accessible register or catalogue of outputs	ADC Hančinský, R., Mihálik, D., Mrkvová, M., Candresse, T., Glasa, M.: Plant Viruses Infecting Solanaceae Family Members in the Cultivated and Wild Environments: A Review. Plants, 2020, 9(5), 667.
	OCA12. Typ výstupu (ak nie je výstup registrovaný v CREPČ alebo CREUČ) / Type of the output (if the output is not registered in CRPA or CRAA) *Výber zo 67 možností (pozri Vysvetlivky k položke OCA12) / Choice from 67 options (see Explanations for OCA12).*	*Článok/article*

	OCA13. Hyperlink na stránku, na ktorej je výstup sprístupnený (úplný text, iná dokumentácia a podobne) / Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.mdpi.com/2223-7747/9/5/667/htm
	OCA14. Charakteristika autorského vkladu / Characteristics of the author's contribution	[20%] Pôvodca koncepcie a hlavný realizátor experimentálnej časti./ The first author, the originator of the concept and the main implementer of the experimental part.
	OCA15. Anotácia výstupu s kontextovými informáciami týkajúcimi sa opisu tvorivého procesu a obsahu tvorivej činnosti a pod. / Annotation of the output with contextual information concerning the description of creative process and the content of the research/artistic/other activity, etc. [8]*Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in SlovakRozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	
OCA16. Anotácia výstupu v anglickom jazyku / Annotation of the output in English [9]*Rozsah do 200 slov / Range up to 200 words*		Plant viruses infecting crop species are causing long-lasting economic losses and are endangering food security worldwide. Ongoing events, such as climate change, changes in agricultural practices, globalization of markets or changes in plant virus vector populations, are affecting plant virus life cycles. Because farmer's fields are part of the larger environment, the role of wild plant species in plant virus life cycles can provide information about underlying processes during virus transmission and spread. This review focuses on the *Solanaceae* family, which contains thousands of species growing all around the world, including crop species, wild flora and model plants for genetic research. In a first part, we analyze various viruses infecting *Solanaceae* plants across the agro-ecological interface, emphasizing the important role of virus interactions between the cultivated and wild zones as global changes affect these environments on both local and global scales. To cope with these changes, it is necessary to adjust prophylactic protection measures and diagnostic methods. As illustrated in the second part, a complex virus research at the landscape level is necessary to obtain relevant data, which could be overwhelming. Based on evidence from previous studies we conclude that *Solanaceae* plant communities can be targeted to address complete life cycles of viruses with different life strategies within the agro-ecological interface. Data obtained from such research could then be used to improve plant protection methods by taking into consideration environmental factors that are impacting the life cycles of plant viruses.
OCA17. Zoznam najviac 5 najvýznamnejších ohlasov na výstup / List of maximum 5 most significant citations corresponding to the output *Rozsah do 200 slov / Range up to 200 words*		1. Yoon, Y.-J., Venkatesh, J., Lee, J.-H., Kim, J., Lee, H.-E., Kim, D.-S., Kang, B.-C.: FRONTIERS IN PLANT SCIENCE 2020, 11, 1098. 2. Abdelkhalek, A., Behiry, S.I., Al-Askar, A.A.: AGRONOMY 2020, 10 (9), agronomy10091312. 3. Jeger, M.J.: PLANTS 2020, 9 (12), 1768, 1-50. 4. Jeger, M.J.: PLANT PATHOLOGY 2021. 5. Altabella, T., Ramirez-Estrada, K., Ferrer, A.: PLANT CELL REPORTS 2021.
OCA18. Charakteristika dopadu výstupu na spoločensko-hospodársku prax / Characteristics of the output's impact on socio-economic practice *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*		Slnečnicovité rastliny sú naďalej veľmi zaujímavým modelom pre virologický výskum, pretože sú všestranné, všadeprítomné a majú k dispozícii veľké množstvo informácií pre virologické štúdie. Okrem toho, vzhľadom na ich vysokú citlivosť na širokú škálu rastlinných patogénnych vírusov, niekoľko známych modelových hostiteľov v rastlinnej virológii patrí do čeľade Solanaceae, napr. Nicotiana tabacum alebo N. benthamiana Solanaceous plants continue to be a very interesting model for virology research because of their versatility, ubiquity and of the large amount of information available for virology studies. Moreover, due to their high susceptibility to a wide variety of plant-pathogenic viruses, several well-known model hosts in plant virology belongs to the *Solanaceae* family, e.g., *Nicotiana tabacum* or *N. benthamiana*
OCA19. Charakteristika dopadu výstupu a súvisiacich aktivít na vzdelávací proces / Characteristics of the output and related activities' impact on the educational process *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*		Výstup je zameraný na rastlinné, potravinárske a priemyselné biotechnológie a je prepojený s výučbou biotechnologických predmetov v rámci študijného programu Biotechnológie. Z tohto výstupu budú do vzdelávacieho procesu implementované poznatky, skúsenosti a výsledky z oblasti molekulárnej biotechnológie a genetickej transformácie rastlín. Dopady sa prejavia vo výučbe predmetov s biotechnologickým, biologickým, molekulárno-biologickým a molekulárno-biotechnologickým obsahom. The output is focused on plant, food and industrial biotechnology and is linked to the teaching of biotechnology subjects within the study program Biotechnology. From this output, knowledge, experience and results from molecular biotechnology and genetic transformation of plants will be implemented into the educational process.

	Impacts will be reflected in the teaching of subjects with biotechnological, biological, molecular-biological and molecular-biotechnological content.

Charakteristika predkladaného výstupu tvorivej činnosti / Characteristics of the submitted research/ artistic/other output

Tlačivo VTC slúži na predkladanie výstupov tvorivej činnosti podľa metodiky hodnotenia tvorivých činností (časť V. Metodiky na vyhodnocovanie štandardov) / The form is used to submit the research/artistic/other outputs according to the evaluation methodology of research/artistic/other activities (part V. The Methodology for Standards Evaluation).

ID konania/ID of the procedure: [1] Kód VTC/Code of the research/artistic/other output (RAOO):[1]	

OCA1. Priezvisko hodnotenej osoby / Surname awarded to the assessed person [2]		Mihálik
OCA2. Meno hodnotenej osoby / Name awarded to the assessed person [2]		Daniel
OCA3. Tituly hodnotenej osoby / Degrees awarded to the assessed person [2]		Docent/ Associate Professor
OCA4. Hyperlink na záznam osoby v Registri zamestnancov vysokých škôl / Hyperlink to the entry of the person in the Register of university staff [3]		https://www.portalvs.sk/regzam/detail/10269
OCA5. Oblasť posudzovania / Area of assessment [4]		4. Biotechnológie/ 4. Biotechnology
OCA6. Kategória výstupu tvorivej činnosti / Category of the research/ artistic/other output *Výber zo 6 možností (pozri Vysvetlivky k položke OCA6) / Choice from 6 options (see Explanations for OCA6).*		Vedecký výstup/ scientific output
OCA7. Rok vydania výstupu tvorivej činnosti / Year of publication of the research/artistic/other output		2015
OCA8. ID záznamu v CREPČ alebo CREUČ *(ak je)* / ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA) [5]		STU.Bratislava.0011986
OCA9. Hyperlink na záznam v CREPČ alebo CREUČ / Hyperlink to the record in CRPA or CRAA [6]		http://www.crepc.sk/portal?fn=*recview&uid=1723843&pageId=resultform&full=0
Charakteristika výstupu, ktorý nie je registrovaný v CREPČ alebo CREUČ / Characteristics of the output that is not registered in CRPA	OCA10. Hyperlink na záznam v inom verejne prístupnom registri, katalógu výstupov tvorivých činností / Hyperlink to the record in another publicly accessible register, catalogue of research/ artistic/other outputs [7]	https://www.mdpi.com/1422-0067/16/12/26137/htm
	OCA11. Charakteristika výstupu vo formáte bibliografického záznamu CREPČ alebo CREUČ, ak výstup nie je vo verejne prístupnom registri alebo katalógu výstupov / Characteristics of the output in the format of the CRPA or the CRAA bibliographic record, if the output is not available in a publicly accessible register or catalogue of outputs	ADC Mihálik, D., Klčová, L., Ondreičková, K., Hudcovicová, M., Gubišová, M., Klempová, T., Čertík, M., Pauk, J., Kraic, J.: Biosynthesis of Essential Polyunsaturated Fatty Acids in Wheat Triggered by Expression of Artificial Gene. Int. J. Mol. Sci. 2015, 16(12), 30046-30060.
	OCA12. Typ výstupu (ak nie je výstup registrovaný v CREPČ alebo CREUČ) / Type of the output (if the output is not registered in CRPA or CRAA) *Výber zo 67 možností (pozri Vysvetlivky k položke OCA12) / Choice from 67 options (see Explanations for OCA12).*	*Článok/article*

	OCA13. Hyperlink na stránku, na ktorej je výstup sprístupnený (úplný text, iná dokumentácia a podobne) / Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.mdpi.com/1422-0067/16/12/26137/htm
	OCA14. Charakteristika autorského vkladu / Characteristics of the author's contribution	[45%] Tvorca myšlienky, hlavný realizátor experimentálnej práce / Donor of the idea, the main implementer of the experimental work
	OCA15. Anotácia výstupu s kontextovými informáciami týkajúcimi sa opisu tvorivého procesu a obsahu tvorivej činnosti a pod. / Annotation of the output with contextual information concerning the description of creative process and the content of the research/artistic/other activity, etc. [8]*Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in SlovakRozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	
OCA16. Anotácia výstupu v anglickom jazyku / Annotation of the output in English [9]*Rozsah do 200 slov / Range up to 200 words*		The artificial gene D6D encoding the enzyme Δ6desaturase was designed and synthesized using the sequence of the same gene from the fungus Thamnidium elegans. The original start codon was replaced by the signal sequence derived from the wheat gene for high-molecular-weight glutenin subunit and the codon usage was completely changed for optimal expression in wheat. Synthesized artificial D6D gene was delivered into plants of the spring wheat line CY-45 and the gene itself, as well as transcribed D6D mRNA were confirmed in plants of T0 and T1 generations. The desired product of the wheat genetic modification by artificial D6D gene was the γ-linolenic acid. Its presence was confirmed in mature grains of transgenic wheat plants in the amount 0.04%–0.32% (v/v) of the total amount of fatty acids. Both newly synthesized γ-linolenic acid and stearidonic acid have been detected also in leaves, stems, roots, awns, paleas, rachillas, and immature grains of the T1 generation as well as in immature and mature grains of the T2 generation. Contents of γ-linolenic acid and stearidonic acid varied in range 0%–1.40% (v/v) and 0%–1.53% (v/v) from the total amount of fatty acids, respectively. This approach has opened the pathway of desaturation of fatty acids and production of essential polyunsaturated fatty acids in wheat.
OCA17. Zoznam najviac 5 najvýznamnejších ohlasov na výstup / List of maximum 5 most significant citations corresponding to the output *Rozsah do 200 slov / Range up to 200 words*		1. Lamine, M., Gargouri, M., Rahali, F.Z., Hamdi, Z., Mliki, A. Local Tunisian durum wheat landraces revisited and rediscovered through modern integrative GC–TOF-MS™-based lipidomic profiling and chemometric approaches (2022) European Food Research and Technology, 248 (5), pp. 1239-1252. https://www.scopus.com/inward/record.uri?eid=2-s2.0-5123484990&doi=10.1007%2fs00217-022-03958-4&partnerID=40&md5=b0f3eec7defe895f0f6f381921399173 2. Nietupski, M., Ludwiczak, E., Cabaj, R., Purwin, C., Kordan, B. Fatty acids present in wheat kernels influence the development of the grain weevil (Sitophilus granarius l.) (2021) Insects, 12 (9), art. no. 806. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85114994463&doi=10.3390%2finsects12090806&partnerID=40&md5=e2336c19e5b4cf5d5fbcab9351203888 3. Cao, X., Dong, Z., Tian, D., Dong, L., Qian, W., Liu, J., Liu, X., Qin, H., Zhai, W., Gao, C., Zhang, K., Wang, D. Development and characterization of marker-free and transgene insertion site-defined transgenic wheat with improved grain storability and fatty acid content (2020) Plant Biotechnology Journal, 18 (1), pp. 129-140. Cited 11 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068506927&doi=10.1111%2fpbi.13178&partnerID=40&md5=fdb640e1aaee1f6ff005afa53073f9cd 4. Fu, C., Chai, Y.-R., Ma, L.-J., Wang, R., Hu, K., Wu, J.-Y., Li, J.-N., Liu, X., Lu, J.-X. Evening primrose (Oenothera biennis) Δ6 fatty acid desaturase gene family: cloning, characterization, and engineered GLA and SDA production in a staple oil crop (2017) Molecular Breeding, 37 (6), art. no. 83, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-

	85020780373&doi=10.1007%2fs11032-017-0682-0&partnerID=40&md5=114b741bc05463ef18ab2b15cc1d26b1 5. Webster, G.R., Teh, A.Y.-H., Ma, J.K.-C. Synthetic gene design—The rationale for codon optimization and implications for molecular pharming in plants (2017) Biotechnology and Bioengineering, 114 (3), pp. 492-502. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007247437&doi=10.1002%2fbit.26183&partnerID=40&md5=317ece1a51a20061994e5a6d41199c42
OCA18. Charakteristika dopadu výstupu na spoločensko-hospodársku prax / Characteristics of the output's impact on socio-economic practice *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Syntetický gén D6D kódujúci enzým (6) desaturázu bol navrhnutý a syntetizovaný modifikáciou sekvencie rovnakého génu z huby Thamnidium elegans. Tento prístup otvoril cestu desaturácii mastných kyselín a produkcii esenciálnych polynenasýtených mastných kyselín v pšenici. The synthetic D6D gene encoding the enzyme (6) desaturase was designed and synthesized by modifying the sequence of the same gene from the fungus Thamnidium elegans. This approach paved the way for the desaturation of fatty acids and the production of essential polyunsaturated fatty acids in wheat.
OCA19. Charakteristika dopadu výstupu a súvisiacich aktivít na vzdelávací proces / Characteristics of the output and related activities' impact on the educational process *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Výstup je zameraný na rastlinné, potravinárske a priemyselné biotechnológie a je prepojený s výučbou biotechnologických predmetov v rámci študijného programu Biotechnológie. Z tohto výstupu budú do vzdelávacieho procesu implementované poznatky, skúsenosti a výsledky z oblasti molekulárnej biotechnológie a genetickej transformácie rastlín. Dopady sa prejavia vo výučbe predmetov s biotechnologickým, biologickým, molekulárno-biologickým a molekulárno-biotechnologickým obsahom. The output is focused on plant, food and industrial biotechnology and is linked to the teaching of biotechnology subjects within the study program Biotechnology. From this output, knowledge, experience and results from molecular biotechnology and genetic transformation of plants will be implemented into the educational process. Impacts will be reflected in the teaching of subjects with biotechnological, biological, molecular-biological and molecular-biotechnological content.

Charakteristika predkladaného výstupu tvorivej činnosti / Characteristics of the submitted research/ artistic/other output

Tlačivo VTC slúži na predkladanie výstupov tvorivej činnosti podľa metodiky hodnotenia tvorivých činností (časť V. Metodiky na vyhodnocovanie štandardov) / The form is used to submit the research/artistic/other outputs according to the evaluation methodology of research/artistic/other activities (part V. The Methodology for Standards Evaluation).

ID konania/ID of the procedure: [1] Kód VTC/Code of the research/artistic/other output (RAOO):[1]	

OCA1. Priezvisko hodnotenej osoby / Surname awarded to the assessed person [2]		Mihálik
OCA2. Meno hodnotenej osoby / Name awarded to the assessed person [2]		Daniel
OCA3. Tituly hodnotenej osoby / Degrees awarded to the assessed person [2]		Docent/ Associate Professor
OCA4. Hyperlink na záznam osoby v Registri zamestnancov vysokých škôl / Hyperlink to the entry of the person in the Register of university staff [3]		https://www.portalvs.sk/regzam/detail/10269
OCA5. Oblasť posudzovania / Area of assessment [4]		4. Biotechnológie/ 4. Biotechnology
OCA6. Kategória výstupu tvorivej činnosti / Category of the research/ artistic/other output *Výber zo 6 možností (pozri Vysvetlivky k položke OCA6) / Choice from 6 options (see Explanations for OCA6).*		Vedecký výstup/ scientific output
OCA7. Rok vydania výstupu tvorivej činnosti / Year of publication of the research/artistic/other output		2021
OCA8. ID záznamu v CREPČ alebo CREUČ *(ak je)* / ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA) [5]		255209
OCA9. Hyperlink na záznam v CREPČ alebo CREUČ / Hyperlink to the record in CRPA or CRAA [6]		https://app.crepc.sk/?fn=detailBiblioFormChildK1GAVM&sid=3107890451245019334FC107D2&seo=CREP%C4%8C-detail-%C4%8Cl%C3%A1nok
Charakteristika výstupu, ktorý nie je registrovaný v CREPČ alebo CREUČ / Characteristics of the output that is not registered in CRPA	OCA10. Hyperlink na záznam v inom verejne prístupnom registri, katalógu výstupov tvorivých činností / Hyperlink to the record in another publicly accessible register, catalogue of research/ artistic/other outputs [7]	
	OCA11. Charakteristika výstupu vo formáte bibliografického záznamu CREPČ alebo CREUČ, ak výstup nie je vo verejne prístupnom registri alebo katalógu výstupov / Characteristics of the output in the format of the CRPA or the CRAA bibliographic record, if the output is not available in a publicly accessible register or catalogue of outputs	ADC Glasa, M., Hančinský, R., Šoltýs, K., Predajňa, L., Tomašechová, J., Hauptvogel, P., Mrkvová, M., Mihálik, D., KRaic, J.: Molecular characterization of potato virus Y (PVY) using high-throughput sequencing constraints on full genome reconstructions imposed by mixed infection involving recombinant PVY strains. Plants-Basel, 2021, 10, 4, 753.
	OCA12. Typ výstupu (ak nie je výstup registrovaný v CREPČ alebo CREUČ) / Type of the output (if the output is not registered in CRPA or CRAA) *Výber zo 67 možností (pozri Vysvetlivky k položke OCA12) / Choice from 67 options (see Explanations for OCA12).*	*Článok/article*

	OCA13. Hyperlink na stránku, na ktorej je výstup sprístupnený (úplný text, iná dokumentácia a podobne) / Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.mdpi.com/2223-7747/10/4/753
	OCA14. Charakteristika autorského vkladu / Characteristics of the author's contribution	[30%] Prvý autor, pôvodca koncepcie a hlavný realizátor experimentálnej časti./ The first author, the originator of the concept and the main implementer of the experimental part.
	OCA15. Anotácia výstupu s kontextovými informáciami týkajúcimi sa opisu tvorivého procesu a obsahu tvorivej činnosti a pod. / Annotation of the output with contextual information concerning the description of creative process and the content of the research/artistic/other activity, etc. [8]*Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in SlovakRozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	
OCA16. Anotácia výstupu v anglickom jazyku / Annotation of the output in English [9]*Rozsah do 200 slov / Range up to 200 words*		In recent years, high throughput sequencing (HTS) has brought new possibilities to the study of the diversity and complexity of plant viromes. Mixed infection of a single plant with several viruses is frequently observed in such studies. We analyzed the virome of 10 tomato and sweet pepper samples from Slovakia, all showing the presence of potato virus Y (PVY) infection. Most datasets allow the determination of the nearly complete sequence of a single-variant PVY genome, belonging to one of the PVY recombinant strains (N-Wi, NTNa, or NTNb). However, in three to-mato samples (T1, T40, and T62) the presence of N-type and O-type sequences spanning the same genome region was documented, indicative of mixed infections involving different PVY strains variants, hampering the automated assembly of PVY genomes present in the sample. The N- and O-type in silico data were further confirmed by specific RT-PCR assays targeting UTR-P1 and NIa genomic parts. Although full genomes could not be de novo assembled directly in this situation, their deep coverage by relatively long paired reads allowed their manual re-assembly using very stringent mapping parameters. These results highlight the complexity of PVY infection of some host plants and the challenges that can be met when trying to precisely identify the PVY isolates involved in mixed infection
OCA17. Zoznam najviac 5 najvýznamnejších ohlasov na výstup / List of maximum 5 most significant citations corresponding to the output *Rozsah do 200 slov / Range up to 200 words*		1. Vinodhini, J., Rajendran, L., Karthikeyan, Molecular evidence of 'N' strain of potato virus Y causing mosaic disease on hot pepper (Capsicum annuum) in India (2023) Indian Phytopathology, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-85149006776&doi=10.1007%2fs42360-023-00605-0&partnerID=40&md5=591d4f7f89d95d669c8ef969ea0841f7 2. Jo, Y., Choi, H., Lee, J.H., Moh, S.H., Cho, W.K. Viromes of 15 Pepper (Capsicum annuum L.) Cultivars (2022) International Journal of Molecular Sciences, 23 (18), art. no. 10507, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-85138339038&doi=10.3390%2fijms231810507&partnerID=40&md5=efe719da01b9e82eee4a8a0d0c9601e6 3.Ullah, I., Daymond, A.J., Hadley, P., End, M.J., Umaharan, P., Dunwell, J.M. Identification of cacao mild mosaic virus (Cammv) and cacao yellow vein-banding virus (cyvbv) in cocoa (theobroma cacao) germplasm (2021) Viruses, 13 (11), art. no. 2152, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-85117894878&doi=10.3390%2fv13112152&partnerID=40&md5=0d78a45c4e267024678a4ede8231d53d 4. Jia, M.-A., Wang, L., Zhang, J.-W., Guo, Y.-S., Li, X.-D., Tian, Y.-P. Genetic diversity of potato virus Y potato isolates from Shandong province, China (2021) Journal of Plant Pathology, 103 (3), pp. 843-852. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85105434503&doi=10.1007%2fs42161-021-00850-0&partnerID=40&md5=a915fd53f8d5473a06397ab6fed25506

OCA18. Charakteristika dopadu výstupu na spoločensko-hospodársku prax / Characteristics of the output's impact on socio-economic practice *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	V posledných rokoch prinieslo vysoko výkonné sekvenovanie (HTS) nové možnosti štúdia rozmanitosti a komplexnosti rastlinných virómov. V takýchto štúdiách sa často pozoruje zmiešaná infekcia jednej rastliny viacerými vírusmi. Tieto výsledky poukazujú na zložitosť infekcie PVY niektorých hostiteľských rastlín a na výzvy, s ktorými sa možno stretnúť pri snahe presne identifikovať izoláty PVY, ktoré sa podieľajú na zmiešanej infekcii. In recent years, high throughput sequencing (HTS) has brought new possibilities to the study of the diversity and complexity of plant viromes. Mixed infection of a single plant with several viruses is frequently observed in such studies. These results highlight the complexity of PVY infection of some host plants and the challenges that can be met when trying to precisely identify the PVY isolates involved in mixed infection.
OCA19. Charakteristika dopadu výstupu a súvisiacich aktivít na vzdelávací proces / Characteristics of the output and related activities' impact on the educational process *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Výstup je zameraný na rastlinné, potravinárske a priemyselné biotechnológie a je prepojený s výučbou biotechnologických predmetov v rámci študijného programu Biotechnológie. Z tohto výstupu budú do vzdelávacieho procesu implementované poznatky, skúsenosti a výsledky z oblasti molekulárnej biotechnológie a genetickej transformácie rastlín. Dopady sa prejavia vo výučbe predmetov s biotechnologickým, biologickým, molekulárno-biologickým a molekulárno-biotechnologickým obsahom. The output is focused on plant, food and industrial biotechnology and is linked to the teaching of biotechnology subjects within the study program Biotechnology. From this output, knowledge, experience and results from molecular biotechnology and genetic transformation of plants will be implemented into the educational process. Impacts will be reflected in the teaching of subjects with biotechnological, biological, molecular-biological and molecular-biotechnological content.

Charakteristika predkladaného výstupu tvorivej činnosti / Characteristics of the submitted research/ artistic/other output

Tlačivo VTC slúži na predkladanie výstupov tvorivej činnosti podľa metodiky hodnotenia tvorivých činností (časť V. Metodiky na vyhodnocovanie štandardov) / The form is used to submit the research/artistic/other outputs according to the evaluation methodology of research/artistic/other activities (part V. The Methodology for Standards Evaluation).

ID konania/ID of the procedure: [1] Kód VTC/Code of the research/artistic/other output (RAOO):[1]	

OCA1. Priezvisko hodnotenej osoby / Surname awarded to the assessed person [2]		Mihálik
OCA2. Meno hodnotenej osoby / Name awarded to the assessed person [2]		Daniel
OCA3. Tituly hodnotenej osoby / Degrees awarded to the assessed person [2]		Docent/ Associate Professor
OCA4. Hyperlink na záznam osoby v Registri zamestnancov vysokých škôl / Hyperlink to the entry of the person in the Register of university staff [3]		https://www.portalvs.sk/regzam/detail/10269
OCA5. Oblasť posudzovania / Area of assessment [4]		4. Biotechnológie/ 4. Biotechnology
OCA6. Kategória výstupu tvorivej činnosti / Category of the research/ artistic/other output *Výber zo 6 možností (pozri Vysvetlivky k položke OCA6) / Choice from 6 options (see Explanations for OCA6).*		Vedecký výstup/ scientific output
OCA7. Rok vydania výstupu tvorivej činnosti / Year of publication of the research/artistic/other output		2005
OCA8. ID záznamu v CREPČ alebo CREUČ *(ak je)* / ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA) [5]		
OCA9. Hyperlink na záznam v CREPČ alebo CREUČ / Hyperlink to the record in CRPA or CRAA [6]		https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=51&SID=D6hABnZlWsdefdnjJWr&page=1&doc=2
Charakteristika výstupu, ktorý nie je registrovaný v CREPČ alebo CREUČ / Characteristics of the output that is not registered in CRPA	OCA10. Hyperlink na záznam v inom verejne prístupnom registri, katalógu výstupov tvorivých činností / Hyperlink to the record in another publicly accessible register, catalogue of research/ artistic/other outputs [7]	https://www.jci.org/articles/view/23755/pdf
	OCA11. Charakteristika výstupu vo formáte bibliografického záznamu CREPČ alebo CREUČ, ak výstup nie je vo verejne prístupnom registri alebo katalógu výstupov / Characteristics of the output in the format of the CRPA or the CRAA bibliographic record, if the output is not available in a publicly accessible register or catalogue of outputs	ADC Schaefer, L., Babelova, A. et al., Mihalik, D., Goote, M., Malle, E., Schaefer, M.R., Gröne, H.-J.: The matrix component biglycan is proinflammatory and signals through Toll-like receptors 4 and 2 in macrophages. J Clin Invest. 2005;115(8):2223-2233.
	OCA12. Typ výstupu (ak nie je výstup registrovaný v CREPČ alebo CREUČ) / Type of the output (if the output is not registered in CRPA or CRAA) *Výber zo 67 možností (pozri Vysvetlivky k položke OCA12) / Choice from 67 options (see Explanations for OCA12).*	*článok/ article*

	OCA13. Hyperlink na stránku, na ktorej je výstup sprístupnený (úplný text, iná dokumentácia a podobne) / Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.jci.org/articles/view/23755/pdf
	OCA14. Charakteristika autorského vkladu / Characteristics of the author's contribution	[10%] Významný podiel na experimentálnej časti práce v medzinárodnom tíme a na špičkovom zahraničnom pracovisku. Autor bol nositeľom hlavnej myšlienky a realizátorom podstatnej časti experimentov. Práca je priekopníckou prácou v oblasti štúdia molekulárneho mechanizmu septických stavov, čo dokazuje skutočnosť, že bola zaradená do databázy WoS medzi vysoko citované práce/ A significant share in the experimental part of the work in an international team and in a top foreign workplace. The author was the bearer of the main idea and the implementer of a substantial part of the experiments. The work is a pioneering work in the study of the molecular mechanism of septic conditions, which proves the fact that it was included in the WoS database among highly cited works.
	OCA15. Anotácia výstupu s kontextovými informáciami týkajúcimi sa opisu tvorivého procesu a obsahu tvorivej činnosti a pod. / Annotation of the output with contextual information concerning the description of creative process and the content of the research/artistic/other activity, etc. [8]*Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in SlovakRozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	
OCA16. Anotácia výstupu v anglickom jazyku / Annotation of the output in English [9]*Rozsah do 200 slov / Range up to 200 words*		Biglycan, a small leucine-rich proteoglycan, is a ubiquitous component of the extracellular matrix (ECM). However, its biological role has not been elucidated in detail. In this work, biglycan was shown to act in macrophages as an endogenous ligand of TLR4 and TLR2, which mediate innate immunity, leading to rapid activation of p38, ERK and NF-kappa B, thereby stimulating the expression of TNF-alpha and macrophage inflammatory protein-2. (MIP-2). The stimulatory effects of biglycan are significantly reduced in macrophages with mutant TLR 4 receptors and completely eliminated in macrophages with a combination of mutations TLR2 (- / -) / TLR4-M, MyD88 - / -, where the effects of biglycan have a significant benefit for the survival of LPS-induced sepsis or zymosan, due to lower levels of circulating TNF-alpha and reduced mononuclear cell infiltration in the lungs, causing less end organ damage. Importantly, when macrophages are stimulated by LPS-induced pro-inflammatory factors, then the macrophages themselves are able to synthesize biglycan. Thus, when released from the ECM or macrophages, the biglycan can enhance inflammation by TLR4 and TLR2 signaling, thereby increasing TNF-alpha and MIP-2 synthesis.
OCA17. Zoznam najviac 5 najvýznamnejších ohlasov na výstup / List of maximum 5 most significant citations corresponding to the output *Rozsah do 200 slov / Range up to 200 words*		Record 1 of 5 Title: The role of pattern-recognition receptors in innate immunity: update on Toll-like receptors Author(s): Kawai, T (Kawai, Taro); Akira, S (Akira, Shizuo) Source: NATURE IMMUNOLOGY Volume: 11 Issue: 5 Pages: 373-384 DOI: 10.1038/ni.1863 Published: MAY 2010 Times Cited in Web of Science Core Collection: 4691 Total Times Cited: 4967 Accession Number: WOS:000276852200006 PubMed ID: 20404851 ISSN: 1529-2908 eISSN: 1529-2916 _____ Record 2 of 5 Title: Sterile inflammation: sensing and reacting to damage Author(s): Chen, GY (Chen, Grace Y.); Nunez, G (Nunez, Gabriel) Source: NATURE REVIEWS IMMUNOLOGY Volume: 10 Issue: 12 Pages: 826-837 DOI: 10.1038/nri2873 Published: DEC 2010 Times Cited in Web of Science Core Collection: 1522 Total Times Cited: 1564 Accession Number: WOS:000284601100009 PubMed ID: 21088683 ISSN: 1474-1733 eISSN: 1474-1741

	_____ Record 3 of 5 Title: Regulation of Adaptive Immunity by the Innate Immune System Author(s): Iwasaki, A (Iwasaki, Akiko); Medzhitov, R (Medzhitov, Ruslan) Source: SCIENCE Volume: 327 Issue: 5963 Pages: 291-295 DOI: 10.1126/science.1183021 Published: JAN 15 2010 Times Cited in Web of Science Core Collection: 1175 Total Times Cited: 1232 Accession Number: WOS:000273629700031 PubMed ID: 20075244 Author Identifiers: ISSN: 0036-8075 eISSN: 1095-9203 _____ Record 4 of 5 Title: Carcinoma-produced factors activate myeloid cells through TLR2 to stimulate metastasis Author(s): Kim, S (Kim, Sunhwa); Takahashi, H (Takahashi, Hiroyuki); Lin, WW (Lin, Wan-Wan); Descargues, P (Descargues, Pascal); Grivennikov, S (Grivennikov, Sergei); Kim, Y (Kim, Youngjun); Luo, JL (Luo, Jun-Li); Karin, M (Karin, Michael) Source: NATURE Volume: 457 Issue: 7225 Pages: 102-U108 DOI: 10.1038/nature07623 Published: JAN 1 2009 Times Cited in Web of Science Core Collection: 729 Total Times Cited: 774 Accession Number: WOS:000262104900039 PubMed ID: 19122641 Author Identifiers: ISSN: 0028-0836 eISSN: 1476-4687 _____ Record 5 of 5 Title: TLR4 activation mediates kidney ischemia/reperfusion injury Author(s): Wu, HL (Wu, Huiling); Chen, G (Chen, Gang); Wyburn, KR (Wyburn, Kate R.); Yin, JL (Yin, Jianlin); Bertolino, P (Bertolino, Patrick); Eris, JM (Eris, Josette M.); Alexander, SI (Alexander, Stephen I.); Sharland, AF (Sharland, Alexandra F.); Chadban, SJ (Chadban, Steven J.) Source: JOURNAL OF CLINICAL INVESTIGATION Volume: 117 Issue: 10 Pages: 2847-2859 DOI: 10.1172/JCI31008 Published: OCT 2007 Times Cited in Web of Science Core Collection: 571 Total Times Cited: 602 Accession Number: WOS:000249894400016 PubMed ID: 17853945 Author Identifiers: ISSN: 001-9738
OCA18. Charakteristika dopadu výstupu na spoločensko-hospodársku prax / Characteristics of the output's impact on socio-economic practice *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Naše výsledky poskytli dôkaz o novej úlohe biglykánovej zložky matrix ako signálnej molekuly a kritického prozápalového faktora. Tieto zistenia sú potenciálne dôležité pre vývoj nových stratégií v liečbe sepsy. Our results provided evidence of the new role of the biglycan matrix component as a signaling molecule and a critical pro-inflammatory factor. These findings are potentially relevant for the development of new strategies in the treatment of sepsis.
OCA19. Charakteristika dopadu výstupu a súvisiacich aktivít na vzdelávací proces / Characteristics of the output and related activities' impact on the educational process *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Výstup je zameraný na rastlinné, potravinárske a priemyselné biotechnológie a je prepojený s výučbou biotechnologických predmetov v rámci študijného programu Biotechnológie. Z tohto výstupu budú do vzdelávacieho procesu implementované poznatky, skúsenosti a výsledky z oblasti molekulárnej biotechnológie a genetickej transformácie rastlín. Dopady sa prejavia vo výučbe predmetov s biotechnologickým, biologickým, molekulárno-biologickým a molekulárno-biotechnologickým obsahom. The output is focused on plant, food and industrial biotechnology and is linked to the teaching of biotechnology subjects within the study program Biotechnology. From this output, knowledge, experience and results from molecular biotechnology and genetic transformation of plants will be implemented into the educational process. Impacts will be reflected in the teaching of subjects with biotechnological, biological, molecular-biological and molecular-biotechnological content.

Charakteristika predkladaného výstupu tvorivej činnosti / Characteristics of the submitted research/ artistic/other output

Tlačivo VTC slúži na predkladanie výstupov tvorivej činnosti podľa metodiky hodnotenia tvorivých činností (časť V. Metodiky na vyhodnocovanie štandardov) / The form is used to submit the research/artistic/other outputs according to the evaluation methodology of research/artistic/other activities (part V. The Methodology for Standards Evaluation).

ID konania/ID of the procedure: [1] Kód VTC/Code of the research/artistic/other output (RAOO):[1]	

OCA1. Priezvisko hodnotenej osoby / Surname awarded to the assessed person [2]		Mihálik
OCA2. Meno hodnotenej osoby / Name awarded to the assessed person [2]		Daniel
OCA3. Tituly hodnotenej osoby / Degrees awarded to the assessed person [2]		Docent/ Associate Professor
OCA4. Hyperlink na záznam osoby v Registri zamestnancov vysokých škôl / Hyperlink to the entry of the person in the Register of university staff [3]		https://www.portalvs.sk/regzam/detail/10269
OCA5. Oblasť posudzovania / Area of assessment [4]		4. Biotechnológie/ 4. Biotechnology
OCA6. Kategória výstupu tvorivej činnosti / Category of the research/ artistic/other output *Výber zo 6 možností (pozri Vysvetlivky k položke OCA6) / Choice from 6 options (see Explanations for OCA6).*		Vedecký výstup/ scientific output
OCA7. Rok vydania výstupu tvorivej činnosti / Year of publication of the research/artistic/other output		2005
OCA8. ID záznamu v CREPČ alebo CREUČ *(ak je)* / ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA) [5]		
OCA9. Hyperlink na záznam v CREPČ alebo CREUČ / Hyperlink to the record in CRPA or CRAA [6]		
Charakteristika výstupu, ktorý nie je registrovaný v CREPČ alebo CREUČ / Characteristics of the output that is not registered in CRPA	OCA10. Hyperlink na záznam v inom verejne prístupnom registri, katalógu výstupov tvorivých činností / Hyperlink to the record in another publicly accessible register, catalogue of research/ artistic/other outputs [7]	https://jasn.asnjournals.org/content/16/7/1948
	OCA11. Charakteristika výstupu vo formáte bibliografického záznamu CREPČ alebo CREUČ, ak výstup nie je vo verejne prístupnom registri alebo katalógu výstupov / Characteristics of the output in the format of the CRPA or the CRAA bibliographic record, if the output is not available in a publicly accessible register or catalogue of outputs	ADC Beck, K.-F., Güder, G., Schaefer, L., Pleskova, M., Babelova, A., Behrens, M.H., Mihalik, D., Beck, M., Schaefer, R.M., Pfeilschifter, J.: Nitric Oxide Upregulates Induction of PDGF Receptor-α Expression in Rat Renal Mesangial Cells and in Anti-Thy-1 Glomerulonephritis. Jorunal of American Society of Nefrology, 2005, 16 (7) 1948-1957; DOI: https://doi.org/10.1681/ASN.2004080638
	OCA12. Typ výstupu (ak nie je výstup registrovaný v CREPČ alebo CREUČ) / Type of the output (if the output is not registered in CRPA or CRAA) *Výber zo 67 možností (pozri Vysvetlivky k položke OCA12) / Choice from 67 options (see Explanations for OCA12).*	*Článok/article*

	OCA13. Hyperlink na stránku, na ktorej je výstup sprístupnený (úplný text, iná dokumentácia a podobne) / Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://jasn.asnjournals.org/content/16/7/1948
	OCA14. Charakteristika autorského vkladu / Characteristics of the author's contribution	[10%] Významný podiel na experimentálnej časti práce v medzinárodnom tíme a na špičkovom zahraničnom pracovisku. Autor bol donátorom hlavnej myšlienky a realizátorom experimentov/ A significant share in the experimental part of the work in an international team and in a top foreign workplace. The author was the donor of the main idea and the implementer of the experiments.
	OCA15. Anotácia výstupu s kontextovými informáciami týkajúcimi sa opisu tvorivého procesu a obsahu tvorivej činnosti a pod. / Annotation of the output with contextual information concerning the description of creative process and the content of the research/artistic/other activity, etc. [8]*Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in SlovakRozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	
OCA16. Anotácia výstupu v anglickom jazyku / Annotation of the output in English [9]*Rozsah do 200 slov / Range up to 200 words*		PDGF and nitric oxide (NO) have been shown to participate in the progression of several forms of glomerulonephritis. A potential influence of NO on PDGF-mediated signaling cascades was therefore examined. Treatment of rat mesangial cells (MC) with the NO donors diethylenetriamine NO (DETA-NO) or spermine-NONOate resulted in a time- and dose-dependent upregulation of PDGF receptor α (PDGFRα) but not PDGFRβ mRNA levels. Administration of DETA-NO also induced PDGFRα protein expression that was paralleled also by an enhanced receptor phosphorylation. Further experiments using 3-(5-hydroxymethyl-2-furyl)-1-benzylindazole (YC-1), an activator of the soluble guanylyl cyclase (sGC), the membrane-soluble cyclic GMP (cGMP) analog 8-Bromo-PET-cGMP, and the inhibitors of sGC ODQ and NS2028 suggest that elevated cGMP levels are responsible for the effects of NO. Importantly, NO-dependent autophosphorylation of PDGFRα drastically augmented PDGF-AA–evoked phosphorylation of PKB/Akt, a classical downstream target of PDGFRα signaling. Furthermore, in a rat model of anti-Thy-1 glomerulonephritis, expression and phosphorylation of PDGFRα but not PDGFRβ expression was markedly reduced in nephritic animals that were treated with the inducible NO synthase inhibitor l-N^6(1-iminoethyl)lysine(dihydrochloride) (L-NIL) compared with non-L-NIL–treated nephritic rats as demonstrated by Western blotting and immunohistochemistry. Taken together, the data suggest that NO modulates PDGFRα-triggered signaling in a cGMP-dependent manner by induction of PDGFRα expression in MC and in a rat model of mesangioproliferative glomerulonephritis. The mechanistic details of this regulation have to be elucidated in further experiments.
OCA17. Zoznam najviac 5 najvýznamnejších ohlasov na výstup / List of maximum 5 most significant citations corresponding to the output *Rozsah do 200 slov / Range up to 200 words*		1. Faraone, D., Aguzzi, M.S., Toietta, G., Facchiano, A.M., Facchiano, F., Magenta, A., Martelli, F., Truffa, S., Cesareo, E., Ribatti, D., Capogrossi, M.C., Facchiano, A.: NEOPLASIA 2009, 11 (8), 732-742. 2. Zhang, Z.-Q., Shi, B., Wu, G.-Q., Qin, K.-R., Jiang, Z.-L., Zhu, L.: EUROPEAN JOURNAL OF PHARMACOLOGY 2009, 613 (1-3), 108-113. 3. Dreieicher, E., Beck, K.-F., Lazaroski, S., Boosen, M., Tsalastra-Greul, W., Beck, M., Fleming, I., Schaefer, L., Pfeilschifter, J.: JOURNAL OF THE AMERICAN SOCIETY OF NEPHROLOGY 2009, 20 (9), 1963-1974. 4. Kempe, D.S., Siraskar, G., Fröhlich, H., Umbach, A.T., Stübs, M., Weiss, F., Ackermann, T.F., Völkl, H., Birnbaum, M.J., Pearce, D., Föller, M., Lang, F.: AMERICAN JOURNAL OF PHYSIOLOGY - RENAL PHYSIOLOGY 2010, 298 (5), F1113-F1117. 5. Kempe, D.S., Ackermann, T.F., Boini, K.M., Klaus, F., Umbach, A.T., Dërmaku-Sopjani, M., Judenhofer, M.S., Pichler, B.J., Capuano, P., Stange, G., Wagner, C.A., Birnbaum, M.J., Pearce, D., Föller, M., Lang, F.: ACTA PHYSIOLOGICA 2010, 200 (1), 75-85.
OCA18. Charakteristika dopadu výstupu na spoločensko-hospodársku prax / Characteristics of the output's impact on socio-economic practice *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*		Podrobné poznatky o vzájomnom ovplyvňovaní signalizácie NO a PDGF môžu pomôcť zlepšiť stratégie liečby mezangioproliferatívnych glomerulárnych ochorení, najmä ak sa uvažuje o blokovaní tvorby NO alebo antagonizácii signalizácie rastových faktorov. The detailed knowledge of the crosstalk between NO and PDGF signaling may help to improve strategies for the treatment of mesangioproliferative glomerular diseases, in particular when blockage of NO formation or antagonization of growth factor signaling are considered.

OCA19. Charakteristika dopadu výstupu a súvisiacich aktivít na vzdelávací proces / Characteristics of the output and related activities' impact on the educational process *Rozsah do 200 slov v slovenskom jazyku / Range up to 200 words in Slovak* *Rozsah do 200 slov v anglickom jazyku / Range up to 200 words in English*	Výstup je zameraný na rastlinné, potravinárske a priemyselné biotechnológie a je prepojený s výučbou biotechnologických predmetov v rámci študijného programu Biotechnológie. Z tohto výstupu budú do vzdelávacieho procesu implementované poznatky, skúsenosti a výsledky z oblasti molekulárnej biotechnológie a genetickej transformácie rastlín. Dopady sa prejavia vo výučbe predmetov s biotechnologickým, biologickým, molekulárno-biologickým a molekulárno-biotechnologickým obsahom. The output is focused on plant, food and industrial biotechnology and is linked to the teaching of biotechnology subjects within the study program Biotechnology. From this output, knowledge, experience and results from molecular biotechnology and genetic transformation of plants will be implemented into the educational process. Impacts will be reflected in the teaching of subjects with biotechnological, biological, molecular-biological and molecular-biotechnological content.