KOMUNICIRANJE ZNANOSTI: PRIKAZ TESTIRANJA RJAVE GNILOBE KROMPIRJA NA DNEVU ODPRTIH VRAT NIB

Tanja DREO[1], Špela PRIJATELJ NOVAK[2], Aleš BLATNIK[3], Špela ALIČ[4], Manca PIRC[5], Vesna Dukić[6], Aleksander BENČIČ[7], Maruša POMPE-NOVAK[8]

[1-8]Nacionalni inštitut za biologijo, Oddelek za biotehnologijo in sistemsko biologijo
[7]Mednarodna podiplomska šola Jožeta Štefana
[8]Univerza v Novi Gorici, Fakulteta za vinogradništvo in vinarstvo

IZVLEČEK

Nacionalni inštitut za biologijo (NIB) je 29. septembra 2023, ko je potekala Evropska noč raziskovalcev, organiziral dan odprtih vrat, da bi premostil vrzel med znanstveno skupnostjo in javnostjo ter povečal razumevanje znanosti v javnosti. Na tem dogodku, ki se ga je udeležilo 550 srednješolcev iz vse Slovenije, so bila predstavljena raznolika raziskovalna prizadevanja, ki jih izvajamo na NIB in poudarjen praktični vpliv znanosti na vsakdanje življenje. Predstavitev je upoštevala strokovnost in raven predznanja glede na ciljno skupino udeležencev. Eden od štirih ključnih poudarkov Oddelka za biotehnologijo in sistemsko biologijo je bil obisk uradnega bakteriološkega laboratorija in testiranja gomoljev krompirja na bakterijo *Ralstonia solanacearum*, ki povzroča rjavo gnilobo krompirja. Uradna laboratorijska diagnostika te bakterije, ki jo izvajamo na NIB, preprečuje, da bi ta bakterija vstopila v Slovenijo in pri nas povzročila škodo. Prikaz, ki je potekal v naši karantenski postaji, je vključeval praktične prikaze poteka priprave vzorcev, informativni plakat in videoposnetek s časovnim zamikom, ki je prikazoval napredovanje bolezni. Uspeh dogodka je zaznamovala velika angažiranost udeležencev, ki je bila razvidna iz njihovega navdušenega sodelovanja in pronicljivih vprašanj. Obiskovalci so bili še posebej navdušeni nad tem, da so lahko oblekli laboratorijske halje in iz prve roke spremljali raziskovalne procese, kar je poudarilo pomen izkustvenega učenja. Ko se po dogodku ozremo nazaj, se zavedamo ključne vloge učinkovitega komuniciranja, upoštevanja uspešnih strategij in tehnik komunikacij prilagojenih ciljni publiki, da znanost postane dostopna in navdihujoča za mlajšo generacijo. Z deljenjem našega dela ne želimo le širiti znanja, temveč tudi spodbujati radovednost in vseživljenjsko strast do znanosti.

[1] dr. biotehn. zn., Večna pot 121, SI-1000 Ljubljana, Slovenija, e-pošta: tanja.dreo@nib.si
[2] strok. sod., prav tam
[3] strok. sod., prav tam
[4] dr. biok. zn., prav tam
[5] dr. biol. zn., prav tam
[6] teh. sodelavec, prav tam
[7] mladi raziskovalec, prav tam in Jamova cesta 39, SI-1000 Ljubljana, Slovenija
[8] prof. dr. biotehn. zn, prav tam in Glavni trg 8, SI-5271 Vipava, Slovenija

Ključne besede: komunikacija v znanosti, javnost v znanosti, dan odprtih vrat, bolezni rastlin, rjava gniloba krompirja

ABSTRACT

ENGAGING YOUNG MINDS: DEMONSTRATING POTATO BROWN ROT RESEARCH AT NIB OPEN DAY

To bridge the gap between the scientific community and the public, the National Institute of Biology (NIB) hosted an open day on September 29th, 2023, coinciding with the European Researchers' Night. This event, attended by 550 high school students from across Slovenia, showcased diverse research endeavours at NIB, emphasizing the practical impact of science in daily life. The presentation considered the expertise and level of scientific knowledge of the target audience. One of the key highlights was the official bacteriology laboratory's demonstration of testing potato tubers for *Ralstonia solanacearum*, the bacterium responsible for potato brown rot. The official laboratory diagnosis of this bacteria, which we carry out at the NIB, prevents these bacteria from entering Slovenia and causing damage to our food production. This interactive session, held in our quarantine station, included hands-on experiences on how the tubers are prepared for testing, an informative poster, and a time-lapse video showing the disease's progression. The event's success was marked by the high engagement of attendees, evident from their enthusiastic participation and insightful questions. The opportunity for students to don lab coats and witness research processes firsthand resonated particularly well, underscoring the importance of experiential learning. Reflecting on the event, we recognize the critical role of effective communication and communication strategies adapted to the target audience in making science relatable and inspiring to the younger generation. By sharing our work, we aim not only to disseminate knowledge but also to ignite curiosity and a lifelong passion for science.

Key words: Science Communication, Public Engagement in Science, Open Day Activities, Plant Diseases, Brown Rot of Potatoes

1 UVOD

V današnjem hitro razvijajočem se svetu sta znanost in tehnologija osrednjega pomena za naše vsakdanje življenje. Vendar pa obstaja velik razkorak med znanstveno skupnostjo in splošno javnostjo, zlasti med mlajšimi generacijami. Ta nepovezanost lahko povzroči napačne predstave, pomanjkanje zanimanja ali celo nezaupanje v znanost. Ker se tega zavedamo, naša organizacija verjame v izjemen pomen komunikacijskih dejavnosti. Z odpiranjem svojih vrat želimo vzpodbuditi radovednost, zanetiti strast in morda vzpodbuditi mlade, da se odločijo za poklicne poti na področju znanstvenih odkritij.

Na področju zdravja rastlin posebne aktivnosti potekajo tudi v okviru “Pobude Evropske unije za zdravje rastlin”. Evropska Unija (EU) je sprejela ključne predpise o zdravstvenem varstvu rastlin. Predpisi določajo standarde za uvoz, nadzor in izkoreninjenje škodljivih organizmov. V letu 2020, ki je bilo pod okriljem Združenih narodov razglašeno za mednarodno leto zdravja rastlin (angl. International Year of

Plant Health), je EU organizirala dogodke in dejavnosti za ozaveščanje javnosti o pomenu zdravih rastlin za doseganje ciljev trajnostnega razvoja. Institucije EU so v sodelovanju z državami članicami več pozornosti posvetile različnim načinom ozaveščanja, da bi kmete, deležnike in širšo javnost obvestile o tveganjih za zdravje rastlin in najboljših praksah. Dan odprtih vrat NIB, vsakoletni dogodek že približno 20 let, je del naše širše strategije spodbujanja ozaveščenosti in razumevanja splošne javnosti o pomenu znanstvenega dela.

1 INTRODUCTION

In today's rapidly evolving world, the science and technology are central to our daily lives. However, there is a huge gap between the scientific community and the public, especially among the younger generations. This disconnect can lead to misconceptions, lack of interest or even distrust in science. As of this, our organisation believes in the paramount importance of communication activities. By opening our doors, we want to stimulate curiosity, spark passion, and perhaps encourage future careers in science discovery.

In the field of plant health, specific activities are also being carried out under the "European Union Plant Health Initiative". The European Union (EU) has adopted key legislation on plant health. The regulations set standards for the import, control, and eradication of harmful organisms. In 2020, declared the International Year of Plant Health (IYPH) by the United Nations, the EU has organised events and activities to raise public awareness of the importance of healthy plants for achieving the Sustainable Development Goals. The EU institutions, in cooperation with the Member States, have increased their focus on different awareness-raising activities to inform farmers, stakeholders and the public about plant health risks and best practices. The NIB Open Day, an annual event, has been for around 20 years, has been part of our wider strategy to promote awareness and understanding among the public of the importance of scientific work.

2 MATERIAL IN METODE DELA

2.1 Dan odprtih vrat Nacionalnega inštituta za biologijo

Dan odprtih vrat je bil organiziran kot pridruženi dogodek Evropske noči raziskovalcev in je potekal v petek, 29. septembra 2023. Organiziran je bil v obliki vodenih predstavitev vseh štirih oddelkov NIB (Oddelka za biotehnologijo in sistemsko biologijo, Oddelka za genetsko toksikologijo in biologijo raka, Oddelka za raziskave organizmov in ekosistemov ter Morske biološke postaje Piran) in knjižnice.

2.2 Izbor teme za predstavitev dela Laboratorija za diagnostiko bakterij

Tema predstavitve Laboratorija za diagnostiko bakterij je bila izbrana po skrbnem razmisleku o javnosti dostopnejših točkah našega dela, ki jih ne-raziskovalci lažje umestijo v svoje vsakodnevne izkušnje. Izbrali smo določanje škodljive bakterije

Ralstonia solanacearum ((Smith 1896) Yabuuchi *et al*. 1996 emend. Safni *et al*. 2014) v krompirju. Krompir je v Sloveniji priljubljeno osnovno živilo in narodna naklonjenost praženemu krompirju (pražen krompir ali restan krompir ali tenstan krompir) je tolikšna, da obstaja celo "Društvo za priznanje praženega krompirja kot samostojne jedi". Hkrati diagnostiko rjave bakterijske gnilobe krompirja, ki jo povzroča karantenska bakterija *R. solanacearum* (Priloga II, del A Izvedbena uredba Komisije (EU) 2019/2072) kot uradni laboratorij opravljamo že od pristopnega obdobja Slovenije v EU, ko je morala država s pregledi in laboratorijskimi analizami podpreti izjavo, da pri nas te nevarne bakterije ni. Odtlej diagnostiko izvajamo v okviru letnih Strokovnih nalog s področja varstva rastlin pod koordinacijo organov Ministrstva za kmetijstvo, gozdarstvo in prehrano. Zaradi teh razlogov, velikega pomena krompirja za javnost ter velikega pomena in tveganja, povezanega z morebitnim vnosom bakterije *R. solanacearum*, je bila ta tema izbrana kot primerna za stik med raziskovalci Laboratorija za diagnostiko bakterij in splošno javnostjo.

2 MATERIALS AND METHODS

2.1 Open Day of the National Institute of Biology

The Open Day was organised as an associated event of the European Researchers' Night. In 2023, it took place on Friday 29 September. It was organised in the form of guided presentations by all four NIB Departments (Department of Biotechnology and Systems Biology, Department of Genetic Toxicology and Cancer Biology, Department of Organismal and Ecosystem Research and the Marine Biological Station Piran) and the library.

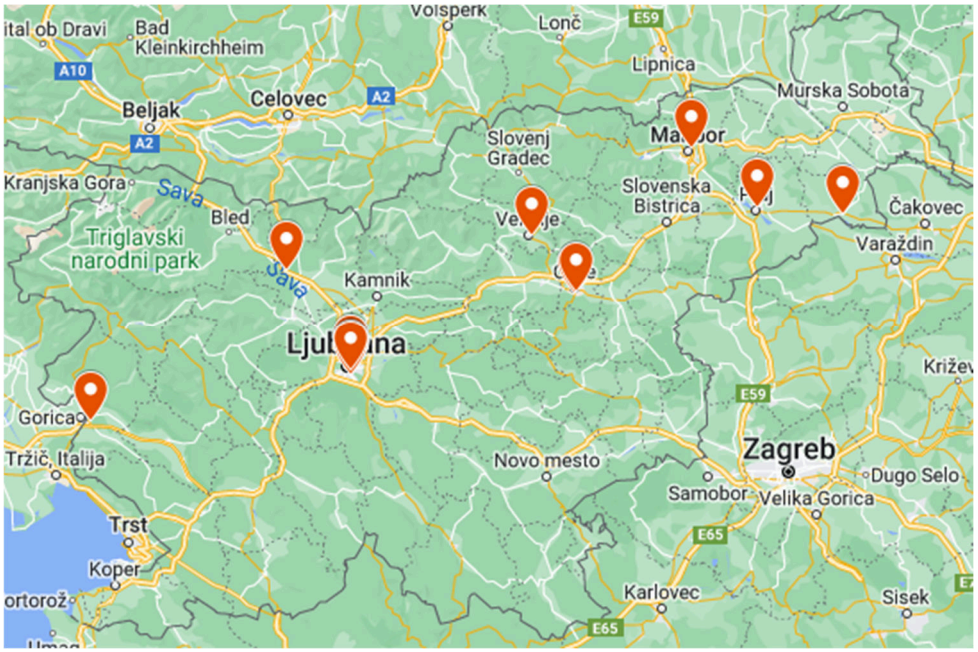
2.2 Selection of a theme for the presentation of the work of the Bacterial Diagnostics Laboratory

The topic for the Bacterial Diagnostics Laboratory presentation was chosen after careful consideration of the more publicly accessible aspects of our work that non-researchers can more easily place in their daily experience. We have chosen to identify the harmful bacterium *Ralstonia solanacearum* ((Smith 1896) Yabuuchi *et al*. 1996 emend. Safni *et al*. 2014) in potatoes. Potatoes are a popular staple food in Slovenia and the national preference for roasted potatoes is such that there is even a 'Society for the Recognition of Roasted Potatoes as a Food in its Own Right'. At the same time, the diagnosis of brown rot of potatoes caused by the quarantine bacterium *R. solanacearum* (Annex II, Part A of Commission Implementing Regulation (EU) 2019/2072.) has been carried out by us as an official laboratory within the framework of the Professional Tasks in the field of plant protection under the coordination of the authorities of the Ministry of Agriculture, Forestry and Food since the period of Slovenia's accession to the EU, when the country had to support the declaration that this dangerous bacterium does not exist in Slovenia by means of inspections and laboratory analyses. For these reasons, the great importance of potatoes for the public and the great importance and risk associated with the possible introduction of *R. solanacearum*, this topic was chosen as an appropriate contact point between the researchers of the Bacterial Diagnostics Laboratory and the public.

3 REZULTATI IN RAZPRAVA

3.1 Dan odprtih vrat Nacionalnega inštituta za biologijo

Dneva odprtih vrat se je 29. septembra 2023 med 9.00 in 17.00 udeležilo 550 srednješolcev iz 13 različnih srednjih šol iz vse Slovenije (Slika 1). V 26 skupinah so vstopili v nove, najsodobnejše laboratorije NIB in ustrezno opremljeni tudi v karantensko postajo NIB.



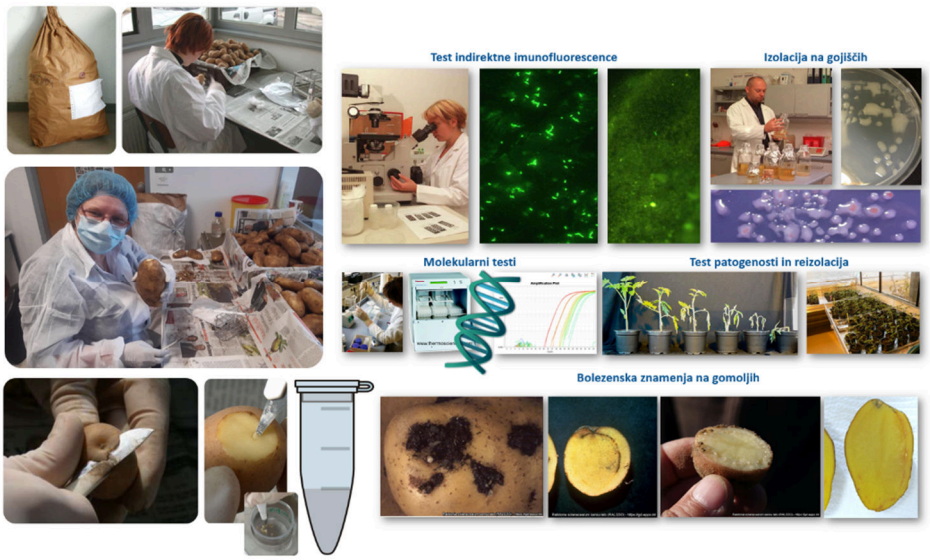
Slika 1: Dijaki, ki so obiskali Nacionalni inštitut za biologijo v okviru dogodka Dan odprtih vrat v letu 2023, so prišli iz srednjih šol različnih regij Slovenije.
Figure 1: The students who visited the National Institute of Biology as part of the Open Day 2023 came from secondary schools in different regions of Slovenia.

Voden ogled Oddelka za biotehnologijo in sistemsko biologijo je vseboval več postaj, na katerih so raziskovalci na poljuden način na kratko predstavili svoje delo. V bakteriološkem laboratoriju so si lahko ogledali prikaz določanja škodljive bakterije *Ralstonia solanacearum*. Dijaki so lahko videli elektronski mikroskop in kako so videti virusi, če jih z njim milijonkrat povečamo. Raziskovalci so obiskovalcem predstavili tudi delo na področju interakcije med rastlinami in virusi in sicer, kako je mogoče označiti virus, ga vnesti v rastlino in nato vizualizirati širjenje virusa po rastlini. Dijaki so smeli vstopiti tudi v laboratorij, kjer so nameščene različne vrste najsodobnejših instrumentov za izvedbo PCR, ki se uporabljajo za kvantifikacijo nukleinskih kislin.

Iste naprave, ki se danes uporabljajo za kvantifikacijo nukleinskih kislin različnih virusov, bakterij, gliv in rastlin, so se med pandemijo uporabljale za kvantifikacijo virusa Sars-Cov-2. Da bi bil obisk še bolj zanimiv, so srednješolci ob koncu obiska Oddelka za biotehnologijo in sistemsko biologijo rešili še kviz.

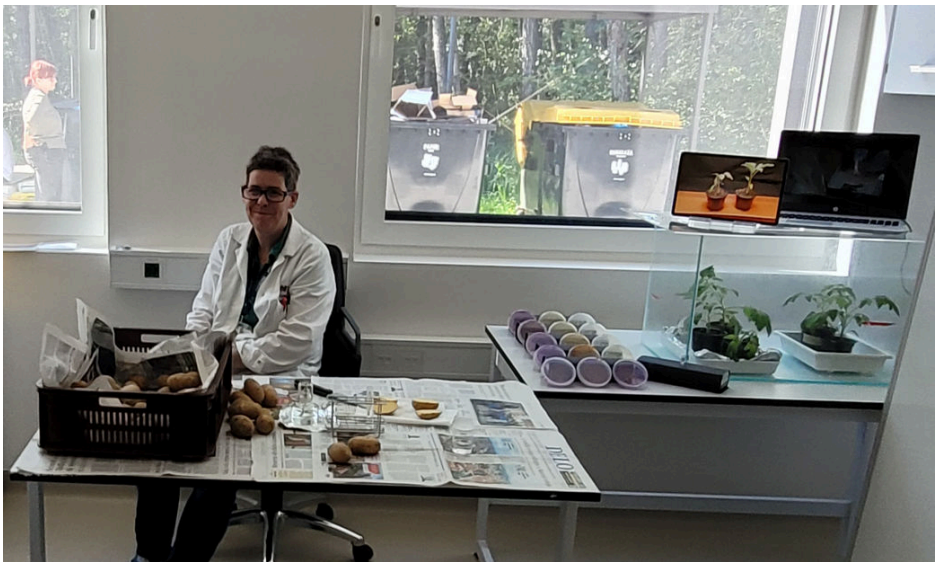
3.2 Predstavitev določanja karantenske bakterije *Ralstonia solanacearum*

Predstavitev dela je potekala v istem laboratoriju, kjer se pripravljajo tudi redni vzorci. Kot uvod v naše delo in v pomoč predstavljajočim raziskovalcem smo na posebej pripravljenem plakatu zbrali bistvene informacije o izvoru krompirja, današnji razširjenosti in pridelavi ter nekatere druge zanimivosti (Dreo, 2023). Pomemben del plakata je prikazoval celotni postopek testiranja krompirja, ki smo ga prikazali z uporabo slik iz arhiva NIB ter bolezenska znamenja, ki so včasih opazna, ko prerežemo in rahlo stisnemo okužen gomolj krompirja. Prikazana je bila priprava vzorca z izrezovanjem stožcev žilnega tkiva iz popkov posameznih gomoljev, testi za določanje bakterije, njena izolacija v čisti kulturi na gojiščih ter preverjanje njene patogenosti z okužbo testnih rastlin paradižnika. Za pripravo sestavljene slike (Slika 2) smo uporabili slike iz arhiva NIB in slike iz baze organizacije EPPO (EPPO, 2024).



Slika 2: Prikaz testiranja krompirja na prisotnost bakterije *Ralstonia solanacearum* na Nacionalnem inštitutu za biologijo, del plakata predstavljenega ob dnevu odprtih vrat.
Figure 2: Demonstration of the testing of potatoes for *Ralstonia solanacearum* at the National Institute of Biology, part of the poster presented at the Open Day.

Prikaz v živo je vključeval postopen prikaz postopka testiranja krompirjevih gomoljev (Slika 3) s strani naših raziskovalcev, ki te postopke rutinsko izvajajo tudi za uradne vzorce. Obiskovalcem so pojasnili, kako potekajo vodovodne žile, v katerih se bakterija *R. solanacearum* najbolje počuti, po gomoljih in kako izrežejo stožce vodovodnega tkiva iz popkov gomoljev za nadaljnje analize. Pokazali so jim tudi kolonije, ki jih bakterije *R. solanacearum* oblikujejo na različnih gojiščih v postopku njihove izolacije v čisti kulturi. Test patogenosti t.j. rastline paradižnika, umetno okužene z bakterijo *R. solanacearum* in z bolj ali manj izraženim venenjem, ki ga je bakterija povzročila, so udeleženci lahko videli v živo v zaščitnih zaprtih steklenih posodah ter na pospešenem videoposnetku celotnega razvoja bolezenskih znamenj.



Slika 3: Materiali, ki so jih obiskovalci videli v živo, so vključevali prikaz celotnega poteka določanja bakterije *R. solanacearum* v gomoljih krompirja.
Figure 3: The live material visitors saw included a demonstration of the complete process of *R. solanacearum* determination in potato tubers.

Sprejem in povratne informacije

Dogodek ob dnevu odprtih vrat NIB so z velikim navdušenjem sprejeli tako dijaki kot učitelji. V anonimni anketi so učitelji zapisali, da so se jim zdele zanimive predstavljene tematike vseh štirih oddelkov NIB. Odgovori o tem, katera tematika se jim je zdela najbolj zanimiva, pa so se med učitelji zelo razlikovali. Sklepamo da zato, ker se posamezen učitelj bolj navdušuje nad posamezno tematiko biologije. Prav tako kot imajo različna zanimanja znotraj biologije učitelji, pa različna področja biologije navdušujejo tudi dijake, zato se nam zdi ključno, da jim predstavimo čim širši spekter dela NIB, da se bodo lažje odločali za študij naravoslovnih smeri in poklice v naravoslovju. Nekateri učitelji so v anketi izrazili željo, da bi imeli dijaki med obiskom

na voljo še več časa za vprašanja, kar pa bi bilo možno edino, če ne bi obiskali vseh oddelkov NIB. Skupno 24 skupin po povprečno 22 dijakov (skupno 550 dijakov) je namreč z dvournimi ogledi popolnoma zapolnilo kapacitete NIB. Po drugi strani pa tudi učitelji ne bi želeli podaljšati obiska na račun manjšega števila raznolikih vsebin. Pri oblikovanju velikosti skupin vedno iščemo optimum med številom dijakom, ki jim lahko omogočimo ogled in kakovostjo ogleda. Manjše skupine bi dijakom zagotovo omogočile aktivnejše sodelovanje na dnevu odprtih vrat NIB, po drugi strani pa bi se nam zdelo škoda, da bi udeležbo lahko omogočili le manjšemu številu dijakov glede na izjemno veliko zanimanje za udeležbo na naših dogodkih za mlade, ki običajno presega naše razpoložljive kapacitete.

Med najpomembnejšimi izkušnjami za dijake je bila priložnost, da si oblečejo bele halje in laboratorijska obuvala, kar jim je omogočilo ekskluziven dostop do laboratorijev, kjer so lahko iz prve roke spremljali raziskave in laboratorijske analize.

Po besedah raziskovalcev, ki so predstavljali svoje delo, se je kar nekaj vprašanj dijakov med skupinami ponavljalo, vključno z vprašanji o varnosti bakterije *R. solanacearum* za ljudi, morebitnih posledicah uživanja okuženega krompirja, razlogih za testiranje na latentne okužbe in razširjenosti okuženih gomoljev krompirja, ki prispejo v koprsko pristanišče.

Na dnevu odprtih vrat NIB smo dijake še dodatno motivirali s tem, da so lahko uporabili njim najljubše naprave, mobilne telefone, za reševanje kviza, pri katerem so v parih tekmovali kdo si je med obiskom zapomnil največ informacij. Učitelji so izrazili namero, da se bodo s svojimi dijaki vrnili na dogodke ob dnevu odprtih vrat tudi v prihodnjih letih.

3.3 Spoznanja in učne točke

Vizualno gradivo, ki je bilo skrbno pripravljeno za ponazoritev našega dela, se je izkazalo za neprecenljivo za predstavljajoče raziskovalce. Ta izkušnja je razširila tudi njihovo zavedanje o širših posledicah njihovih raziskav ter o globini njihovega znanja in strokovnosti na predstavljenih področjih. Vendar nam je omejen čas, ki je bil na voljo na vsaki postaji med obiskom, pogosto preprečil, da bi se bolj izčrpno poglobili v naše teme in odgovorili na vsa vprašanja, ki so nam jih zastavili obiskovalci. Čeprav dogodek ocenjujemo kot zelo uspešen, nas je kot raziskovalce spodbudil k razmisleku o morebitnih izboljšavah. Sodelovanje s strokovnjaki, ki obvladajo različne pedagoške pristope in posamezniki, ki so usposobljeni za učinkovito posredovanje informacij različnim ciljnim skupinam na privlačen način, bi lahko izboljšalo učinek prihodnjih dogodkov. Prepričani smo, da bi takšno sodelovanje lahko še dodatno obogatilo izkušnjo tako naše ekipe kot naših cenjenih obiskovalcev. Izkušnje iz dneva odprtih vrat smo uporabili pri pripravi postra, ki smo ga o aktivnosti, pripravili za 16. Slovensko posvetovanje o varstvu rastlin. Pogosta vprašanja smo prikazali v obliki loput za dvigovanje pod katerimi so se skrivali odgovori (Dreo *in sod*., 2024).

3 RESULTS AND DISCUSSION

3.1 Open Day of the National Institute of Biology

On September 29th, 2023, between 9.00 and 17.00, 550 secondary school students from 13 different secondary schools from all over Slovenia (Figure 1) attended presentations of the research being carried out in the departments and entered the new state-of-the-art NIB laboratories and properly equipped, the NIB quarantine station in groups of 26. The guided tour included several stations where the researchers gave a brief presentation of their work in a polite and informative way. In the bacteriology laboratory, visitors could see a demonstration on how to identify the harmful bacterium *Ralstonia solanacearum*. Students could see what an electron microscope looks like and what viruses look like when magnified a million times. The researchers also showed visitors their work on plant-virus interactions, showing how a virus can be labelled, introduced into a plant and then visualised as it spreads through the plant. The students were also allowed to enter the laboratory, where various types of state-of-the-art PCR instruments used to quantify nucleic acids are installed. The same machines used today to quantify nucleic acids from different viruses, bacteria, fungi and plants were used to quantify the Sars-Cov-2 virus during the pandemic. To make the visit even more interesting, at the end of the visit, the secondary school students took a quiz at the Department of Biotechnology and Systems Biology.

3.2 Demonstration of the quarantine determination of *Ralstonia solanacearum*

The presentation took place in the same sample preparation room where the regular samples are prepared. As an introduction to our work and to help the presenting researchers, we have compiled essential information on the origin of the potato, its current distribution and production, and some other interesting facts on a specially prepared poster (Dreo, 2023). An important part of the poster showed the whole process of testing potatoes, which we illustrated using images from the NIB archives, and the disease symptoms that are sometimes visible when an infected potato tuber is cut and lightly squeezed. Sample preparation by excising cones of vascular tissue from the buds of individual tubers, tests to identify the bacterium, its isolation in pure culture on culture media and verification of its pathogenicity by infection of tomato test plants were demonstrated. For the preparation of the composite image (Figure 1), we used images from the NIB archive and images from the EPPO database (EPPO, 2024).

3.3 Reception and feedback

The NIB Open Day event was received with great enthusiasm by both students and teachers. In an anonymous survey, teachers wrote that they found the topics presented in all four NIB departments interesting, and the answers on which topic they found most interesting varied widely between teachers. We conclude that this is because each teacher is more enthusiastic about a particular biology topic. Just as teachers have

different interests within biology, so do students have different interests in different areas of biology, and we feel it is crucial to expose students to as wide a range of NIB's work as possible to help them make informed choices about studying and pursuing careers in the natural sciences. Some teachers in the survey expressed the wish that students had more time to ask questions during the visit, but this would only be possible if they did not visit all the NIB departments, which would be a great pity as different students are fascinated by different topics, as we would not be able to extend the two-hour visit. In fact, a total of 24 groups of 22 pupils on average (550 pupils in total) filled the NIB's capacity with a two-hour visit. On the other hand, the teachers would not have wanted to extend the visit either. When designing the size of the groups, we always look for the optimum between the number of students we can give a tour to and the quality of the visit.

Smaller groups would certainly allow students to participate more actively in the NIB Open Day, but on the other hand it would be a pity to be able to offer participation to only a small number of students, given the extremely high level of interest in our youth events, which usually exceeds our available capacity.

One of the most important experiences for the students was the opportunity to wear white coats and laboratory shoes, which gave them exclusive access to the laboratories where they could observe first-hand the research and laboratory analysis.

According to the researchers presenting their work, the students asked several recurring questions, including about the safety of *R. solanacearum* for humans, the possible consequences of eating contaminated potatoes, the reasons for testing for latent infections, and the prevalence of contaminated potato tubers arriving at the Port of Koper.

At the NIB Open Day, students were further motivated by being able to use their preferred devices, mobile phones, to solve a quiz where they competed in pairs to see who could remember the most information during the visit. Teachers expressed their intention to return with their students to the Open Day events in future years.

3.4 Lessons and learning points

The visual material that was carefully prepared to illustrate our work proved invaluable to the presenting researchers. The experience also broadened their awareness of the wider implications of their research and the depth of their knowledge and expertise in the areas presented. However, the limited time available at each station during the visit often prevented us from delving more fully into our topics and answering all the questions posed by visitors. Although we consider the event to have been a great success, as researchers it has encouraged us to reflect on possible improvements. Collaborating with experts who are proficient in different pedagogical approaches and individuals who are skilled in delivering information effectively to different audiences in an engaging way could improve the impact of future events. We are convinced that such collaboration could further enrich the experience of both our team and our valued visitors. We used the experience from the Open Day to prepare a poster about the

activity for the 16th Slovenian Consultation on Plant Protection. We presented the FAQs as lift-the-flap questions with the answers hidden underneath (Dreo *et al*., 2024).

4 SKLEPI

Zaradi velike nevarnosti, ki jo predstavljajo za rastline škodljive bakterije kot je *Ralstonia solanacearum* in kulturnega pomena krompirja za Slovence se je zdelo še posebej primerno, da temo določanja te bakterije predstavimo na dnevu odprtih vrat. Odziv obiskovalcev je potrdil primernost izbora teme, ki poudarja ključno vlogo znanstvenih znanj pri ohranjanju javne varnosti in interes za dostopno predstavljeno znanost. Iskanje pravega ravnovesja med zgoščevanjem informacij in izbiranjem ključnih točk ostaja stalen izziv pri pripravah na prihodnje podobne dogodke.

4 CONCLUSIONS

Due to the high risk posed by plant-damaging bacteria such as *Ralstonia solanacearum* and the cultural importance of potatoes for Slovenians, it seemed particularly appropriate to present the identification of this bacterium at the Open Day. The response of the visitors confirmed the appropriateness of the choice of the topic, which highlights the key role of scientific knowledge in maintaining public safety. Also, the success of the Open Day confirms that there is interest for scientific topics presented in accessible way. Finding the right balance between condensing information and selecting key points remains an ongoing challenge in preparing for future similar events.

5 ZAHVALA

Zahvaljujemo se promocijski skupini Oddelka za biotehnologijo in sistemsko biologijo v letu 2023, ki je vodila organizacijo dogodka in nas podpira v prizadevanjih za popularizacijo našega dela. Na dnevu odprtih vrat so bile v Laboratoriju za diagnostiko bakterij Oddelka za biotehnologijo in sistemsko biologijo NIB predstavljene aktivnosti, ki jih financira Raziskovalni program Biotehnologija in sistemska biologija rastlin (št. P4-0165), ki ga sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije (ARIS) iz državnega proračuna, ter Strokovna naloga s področja varstva rastlin ki jo financira Ministrstvo za kmetijstvo, gozdarstvo in prehrano (MKGP) iz državnega proračuna. Prispevek je bil na konferenci predstavljen v obliki postra, ki je dostopen na spletnem repozitoriju Zenodo.

5 ACKNOWLEDGEMENTS

We would like to thank the 2023 Promotion Team of the Department of Biotechnology and Systems Biology for leading the organisation of the event and supporting us in our efforts to promote our work. The Open Day at the Bacterial Diagnostics Laboratory of the Department of Biotechnology and Systems Biology of the NIB presented activities funded by the Research Programme Biotechnology and Systems Biology of Plants (No. P4-0165), co-financed by the Public Agency for Research Activities of the Republic of Slovenia (ARIS) from the national budget, and the Expert Task on Plant Protection, funded by the Ministry of Agriculture, Forestry and Food (MAFF) from the national budget. The paper was presented at the conference in the form of a poster, which is available on the Zenodo online repository.

6 LITERATURA / REFERENCES

Dreo, T. (2023). Informativni plakat za predstavitev izbranih aktivnosti Laboratorija za diagnostiko bakterij na Dnevu odprtih vrat Nacionalnega inštituta za biologijo v letu 2023 (Version 1). Zenodo. https://doi.org/10.5281/zenodo.10908604.

Dreo, T., Prijatelj-Novak, Š., Blatnik, A., Alič, Š., Pirc, M., Dukić, V., Benčič, A., Pompe-Novak, M. (2024). Komuniciranje znanosti: prikaz testiranja rjave gnilobe krompirja na Dnevu odprtih vrat NIB (Verzija 1). 16. Slovensko posvetovanje o varstvu rastlin z mednarodno udeležbo v letu 2024 (16. SPVR), Bohinjska Bistrica. Zenodo. https://doi.org/10.5281/zenodo.10780918.

EPPO (2024), EPPO Global Database (dostopno na spletu/available online). https://gd.eppo.int.

Izvedbena uredba Komisije (EU) 2019/2072 z dne 28. novembra 2019 o določitvi enotnih pogojev za izvajanje Uredbe (EU) 2016/2031 Evropskega parlamenta in Sveta, kar zadeva ukrepe varstva pred škodljivimi organizmi rastlin, ter razveljavitvi Uredbe Komisije (ES) št. 690/2008 in spremembi Izvedbene uredbe Komisije (EU) 2018/2019, UL L 319, 10.12.2019, str. 1–279.

Safni, I., Cleenwerck, I., De Vos, P., Fegan, M., Sly, L., Kappler, U., 2014. Polyphasic taxonomic revision of the *Ralstonia solanacearum* species complex: proposal to emend the descriptions of *Ralstonia solanacearum* and *Ralstonia syzygii* and reclassify current *R. syzygii* strains as *Ralstonia syzygii* subsp. *syzygii* subsp. nov., *R. solanacearum* phylotype IV strains as *Ralstonia syzygii* subsp. *indonesiensis* subsp. nov., banana blood disease bacterium strains as *Ralstonia syzygii* subsp. *celebesensis* subsp. nov. and *R. solanacearum* phylotype I and III strains as *Ralstonia pseudosolanacearum* sp. nov. International Journal of Systematic and Evolutionary Microbiology 64, 3087–3103. https://doi.org/10.1099/ijs.0.066712-0.

Yabuuchi, E., Kosako, Y., Yano, I., Hotta, H., Nishiuchi, Y., 1995. Transfer of two *Burkholderia* and an *Alcaligenes* species to *Ralstonia* gen. nov. Microbiology and Immunology 39, 897–904. https://doi.org/10.1111/j.1348-0421.1995.tb03275.x.