



Science for Society

... Learning Makes Sense

Rudenko Natasha

Biology Centre AS CR,

Institute of Parasitology,

Ceske Budejovice, Czech Republic



PRAGMATICK

THE CZECH ACADEMY OF SCIENCES – TOP RESEARCH IN THE PUBLIC INTEREST

The Biology Centre is part of a system containing 54 public research institutions associated in the Czech Academy of Sciences. Its mission is to provide cutting-edge research focused on the issues and challenges of contemporary society. For example, the staff of the Biology Centre has been significantly involved in the fight against covid-19, either by testing patients' samples or carrying out research projects. The Biology Centre is also a coordinator of the Strategy AV21 programme, which aims at the preservation of the natural environment and biodiversity.





SCIENCE IN SOUTH OF BOHEMIA

The Biology Centre of the Czech Academy of Sciences (CAS) based in Ceske Budejovice with its five research institutes and more than seven hundred employees is the largest institute of CAS outside Prague. At the same time it ranks among the largest scientific centres engaged in environmentally oriented research in Europe. The Biology Centre develops trends in evolutionary biology and ecology that respond to problems of global importance and the sustainability of life on Earth.

BIOLOGY CENTRE CAS

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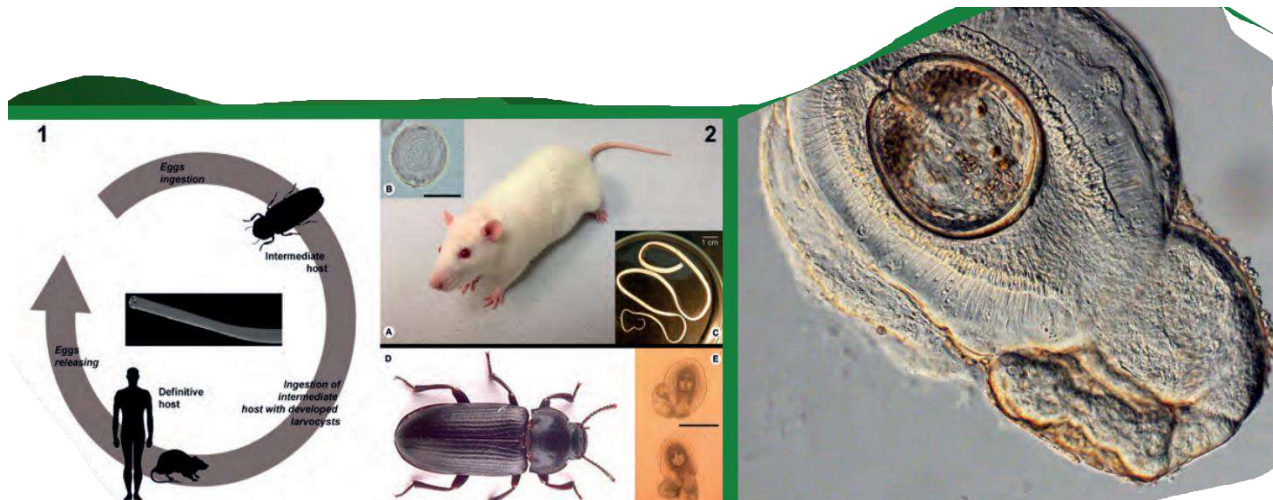
HEALTH OF BEES

One of the serious global problems today is poor health and a rapid decline of pollinators. Bee colonies are weakened by environmental pollution. They suffer from diseases and a lack of quality food offer in the countryside. At the Biology Centre, we study bees' defence reactions against pathogens, commonly used insecticides and other pollutants. We also test natural substances that increase bees' resistance to these adverse factors. To do this, we use both biochemical-physiological methods and monitoring of bees using artificial intelligence technologies.



INTESTINAL PARASITES AS A MEDICINE

Treatment with intestinal worms? Sounds crazy! For the past 100 years modern medicine has been trying to eradicate all the parasites from the human body – and they have done so successfully. However, because of the large increase of intestinal inflammation, colitis and disease in our population, scientists are coming up with a radical turnaround. As it emerges, some parasites do not harm humans, on the contrary they can benefit them. These relatively new ideas are being verified in the parasitological laboratories, where we study benign parasites and their influence on the human immune system and related intestinal diseases. Within the pilot study, we demonstrated the beneficial effect of the candidate worm, the rat tapeworm, on an experimental model of Crohn's disease, in which intestinal inflammation was suppressed by presence of the worm. Further, we are running subsequent studies to find active substances from this tapeworm with potential anti-inflammatory effects. In the future, these substances could be the one of the strategies of biological treatment for patients with non-specific intestinal inflammation.



BIG AND WILD ARE BACK

The return of large herbivores to the Czech landscape is undoubtedly the most respected and positively perceived ecological project in the Czech Republic. The project was initiated and is being managed by scientists from the Biology Centre. Large herbivores pose rational and environmentally-friendly solutions to one of the most pressing problems faced by European nature conservation today, i.e. shrub encroachment of open landscapes. The three key species of large ungulates of Europe - wild horses, European bison and back-bred aurochs are grazing again, after centuries, in the reserve near Milovice, Central Bohemia. Their herds change the ecosystem almost in front of our eyes. Due to their influence, rare species of plants and animals are returning to the landscape.



Hop lupulin glands are a rich source of precious substances.
Lupulinové žlázky u chmele jsou zdrojem cenných látek.



CURATIVE BEER

We have discovered substances found in hops with an anticancer effect. We explore how they actually work and if it would be possible to increase their production in hops. In the future, beer could help us in the battle against cancer.



Rx

*Uncover the Truth About the
Healing Properties of Beer
for Mental and Physical Health*



BEER AS MEDICINE

THE WORLD'S OLDEST TREATMENT
BACKED BY MODERN SCIENCE

MISSION

- Informing and educating the public
- Building the brand of BC
- Enhancing publicity and prestige



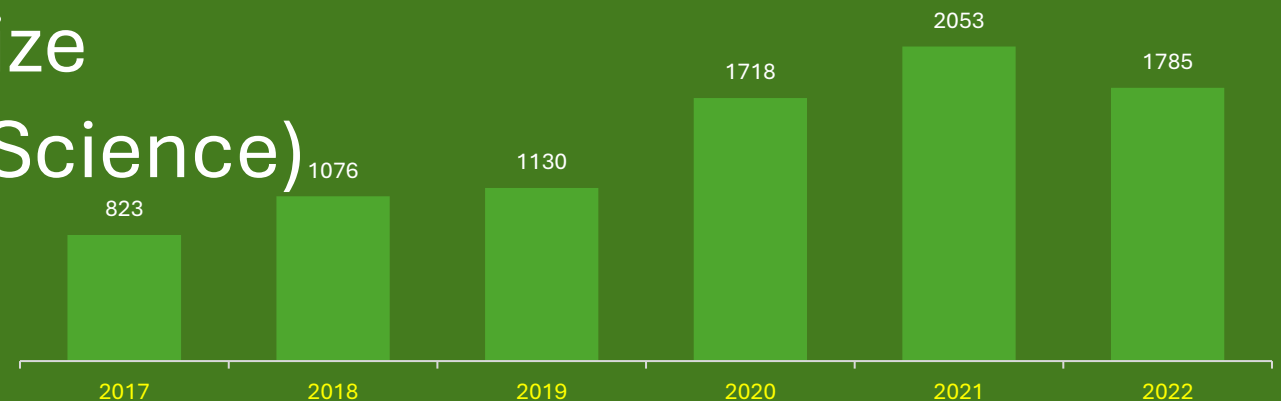
MEDIA



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- 1785 media outputs (2947 with mutations)
- 20 press releases
- Collaboration with media
Regional TV Jihočeská televize
(6 episodes of series Life is Science)

Media outputs -years



MOST POPULAR SCIENTISTS IN MEDIA



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Grubhoffer Libor 227

Jirků Miloslav 221

Šmejkal Marek
63

Jarić Ivan 42

Volf Martin 39

Čech Martin 38

Doležal Petr 37



EVENTS – RESEARCHERS' NIGHT

- September 30, 5-10 pm
- 17 stands / activities for public
- 2 000 visitors
- 52 post on social media
- 50k reach on social media
- Team of 40+ employees



EVENTS – CITY NATURE CHALLENGE



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- 445 cities globally
- BC organizer for České Budějovice
- Results:
 - 1841 observations
 - 543 species
 - 82 participants
 - ČB at 170th place



OTHER EVENTS FOR PUBLIC



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- Open Days
- 2 Workshops for schools
- 2 Courses for public (6 sessions)
- Lecture series Akademické půlhodinky
- Citizen science project
- Photo exhibition about soils



For You



Akademické půlhodinky - Natasha Rudenko: Lymská borelióza a klíšťata: v jižních Čechách jako doma...

941 views • 8 months ago

Střípky z historie roku 1918

1.3K views • 5 years ago

Hřichy mládí, aneb co o sobě napsal Karel IV.

53K views • 8 years ago

Sonda do cesty reformace, aneb c...

2.4K views • 7 years ago

Created playlists



Akademické půlhodinky 2024 18 cyklus

View full playlist

Akademické půlhodinky 2023 17 cyklus

View full playlist

Noc vědců 2023 na Biologickém centru AV ČR

View full playlist

Akademické půlhodinky 2023 16 cyklus

View full playlist

Akademické půlhodinky 2022

View full playlist

LIVE

View full playlist

Popular videos



Hřichy mládí, aneb co o sobě napsal Karel IV.

53K views • 8 years ago

Užitečná sršeň obecná 2020 - popularizační dokument z...

50K views • 3 years ago
CC

Kdo řídí vaše geny - seznamte se s epigenetikou

22K views • 6 years ago

Do tajů biologie Bolena dravého a Okouna říčního...

18K views • 10 years ago

Co všechno přinesla dálnice aneb archeologické výzkum...

16K views • 6 years ago

Ovce jako živá sekačka

10K views • 7 years ago

Videos



Akademické půlhodinky - Martin Šeda: Jak kvalitní je...

116 views • 3 months ago

Akademické půlhodinky - Miloslav Lapka: Land Art...

28 views • 3 months ago

Akademické půlhodinky 18 - Vojta Kolář: Potápník...

94 views • 3 months ago

Život je věda - Novinky z Ústavu molekulární biologie...

201 views • 7 months ago

Život je věda - Novinky z Hydrobiologického ústavu...

118 views • 7 months ago

Život je věda - Novinky z Entomologického ústavu...

150 views • 8 months ago

MOBILE LABORATORY

28 educational programs in total

- 10 programs for grammar schools
- 5 programs for high schools
- 2 summer workshops

- **11 festivals and fairs**

City Nature Challenge (400 visitors)

HOBBY (40 000 visitors)

Science Fair (30 000 visitors)

Věda Fest Fair (thousands visitors)

Maker Day (800 visitors),

Země Živitelka Agrofair (115 000 visitors)

Maker Fair (ca 1000 visitors)

and others





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ON TRACK OF A CURE FOR TICK-BORNE ENCEPHALITIS AND ZIKA DISEASE

In our microbiological laboratory with a Biosafety level 3, we research high-risk viruses and pathogens that endanger human health. We have discovered substances that show a high anti-viral effect against tick-borne encephalitis. Moreover we have successfully tested them against a closely related Zika virus in response to the outbreak of the epidemic in South America. The substances – nucleoside analogues – are related to those which were studied by Professor Antonín Holý and directly block the multiplication of the virus in a host cell. Now, the active compounds are being modified into pro-drug forms.





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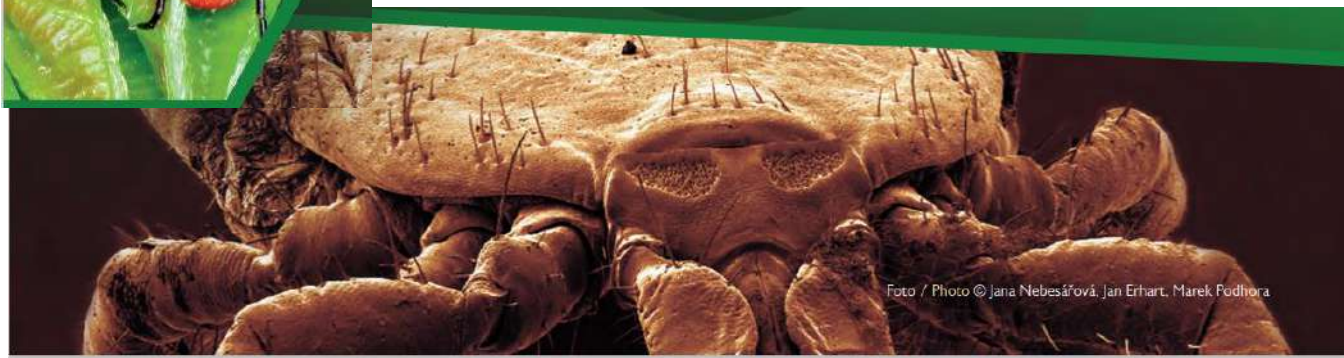


Foto / Photo © Jana Nebesářová, Jan Erhart, Marek Fodhora

FIGHTING OFF TICKS

Ticks are the most widespread vectors of serious diseases in the Northern Hemisphere. We have developed a vaccine against ticks for pets and cattle and are working on universal human vaccines against Lyme borreliosis and other tick transmitted diseases. At the same time, we are discovering new bioactive substances from ticks that are interesting for medicine, such as pain suppressants.

Project name: **Tick-borne bacterial infections in urban areas - where does the real risk of infection lie?**

KLÍŠŤATA VE MĚSTĚ

- ✓ Sběr dat - Mapování klíšťat - Výsledky
- ✓ Laboratorní analýzy
- ✓ Analýza dat a modelování výskytu klíšťat
- ↓ Pomozte nám s realizací projektu ↓

Zadej Klíště @

Zobraz Mapu 🗺



Informace o projektu

Název projektu:

Klíšťaty přenášené bakteriální nákazy v urbánních oblastech - kde číhá skutečné riziko infekce?

Cíle projektu:

Hlavním cílem projektu je v České republice zmapovat reálné riziko infekce člověka vybranými klíšťaty přenášenými patogeny v urbánních biotopech, principiálně umožňujících etablování nezávislých populací klíšťat.

Doba realizace projektu:

Realizace v letech: 2023 - 2026
Doba řešení: 4 roky



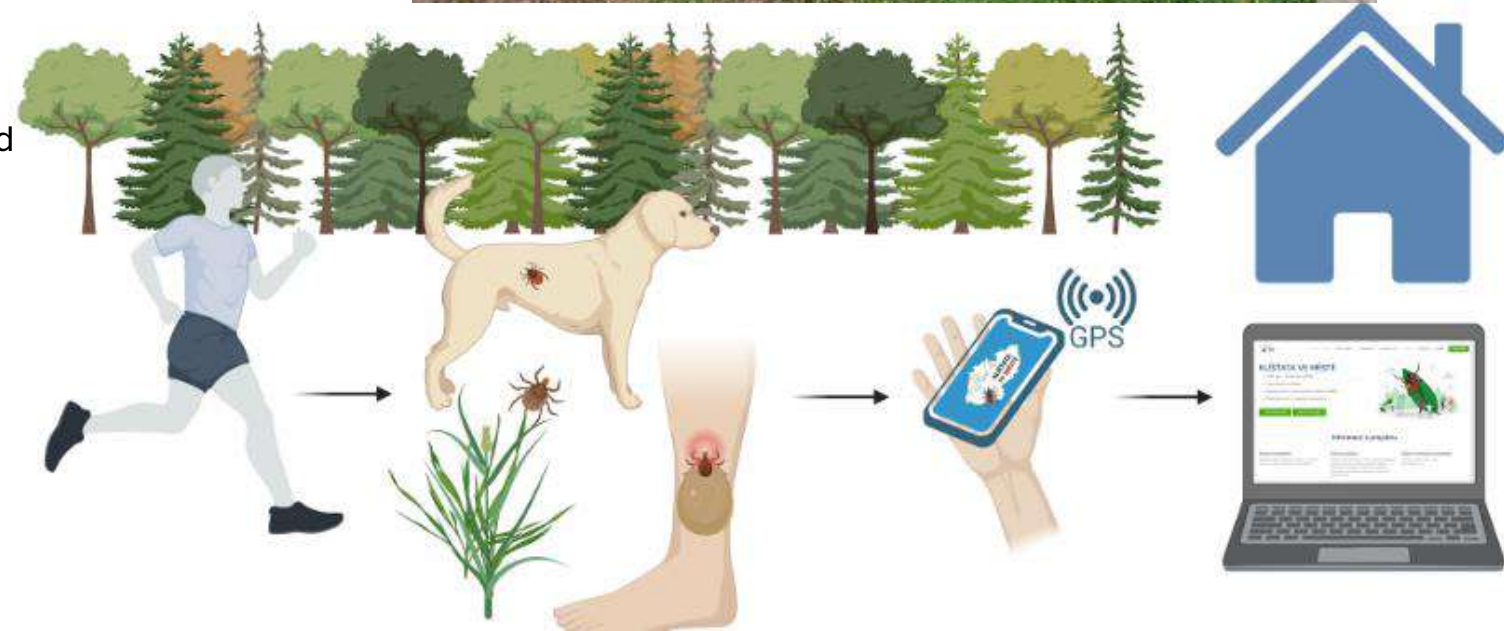
TICKS IN THE CITY

Project objectives:

The main goal of the project is to map in the Czech Republic the real risk of human infection by selected pathogens, carried by ticks, in urban habitats (parks, recreation area, etc.)

Pathogens of interest:

Borrelia burgdorferi sensu lato
Borrelia miyamotoi
Anaplasma phagocytophilum
Neorhlichia mikurensis
Rickettsia sp.





TICKS IN THE CITY



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First 8 months of the project in numbers:

Collected: 3297 ticks

Analyzed: 2134 ticks

In the areas of urban greenery monitored by us, the activity of ticks last season ranged between 1 ticks per 100 m² and 72 ticks per 100 m².

Number of ticks infected with at least 1 out of 5 pathogens of interest: 44%

Number of ticks infected with Lyme disease spirochetes: 26% (from 15 % to 32 % by locality)

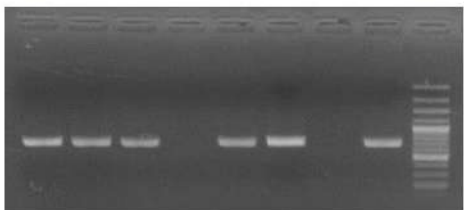
In a number of parks, for example, LD spirochetes were present even in a higher percentage of ticks (over 30%) than is usually in forests.

Ticks in some parks are even more infected than in forests!

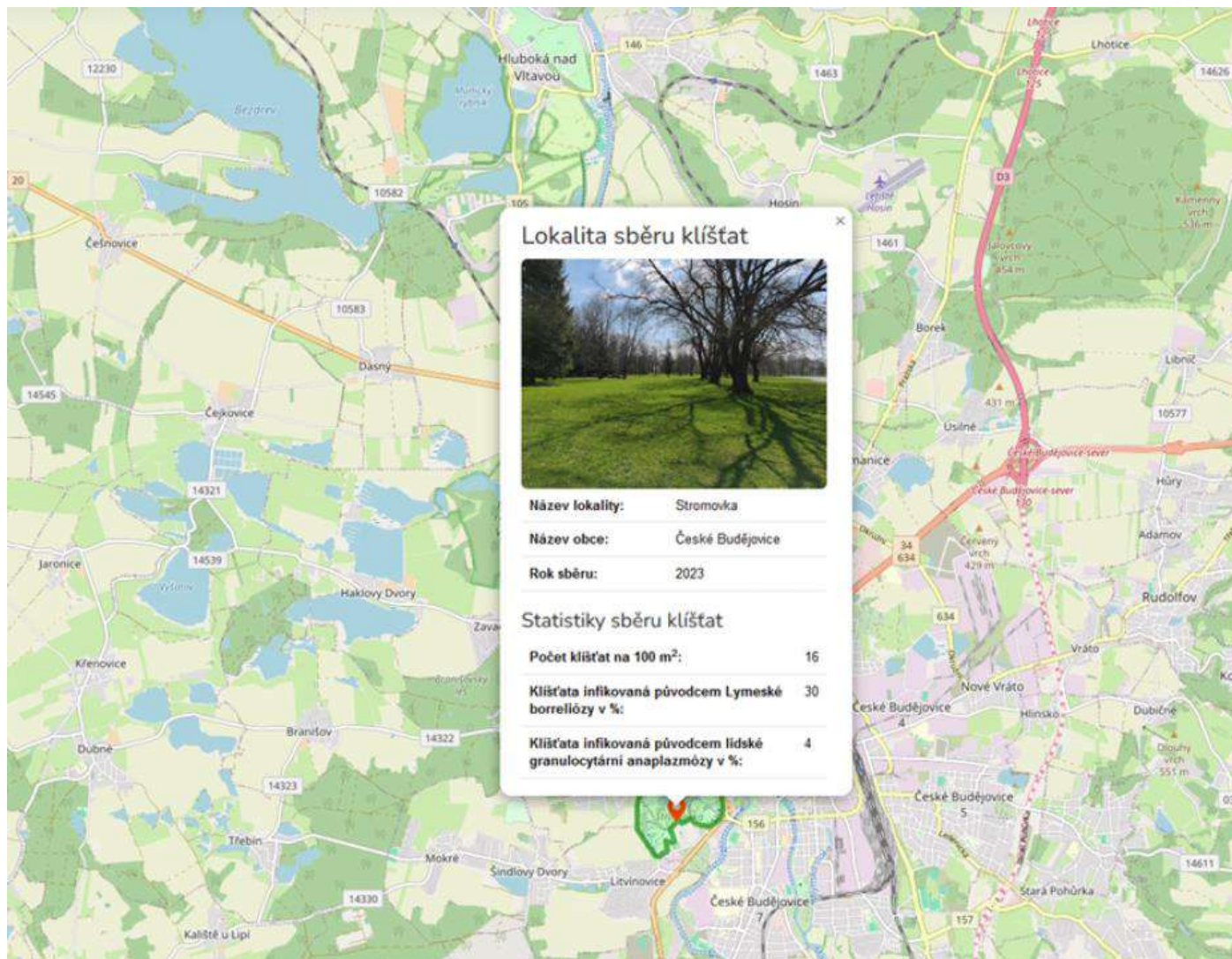
Are you wondering how many ticks are in your park right now?



Samec klíštěte obecného pochoduje po kůži. Samci tohoto klíštěte většinou nesoují krev.

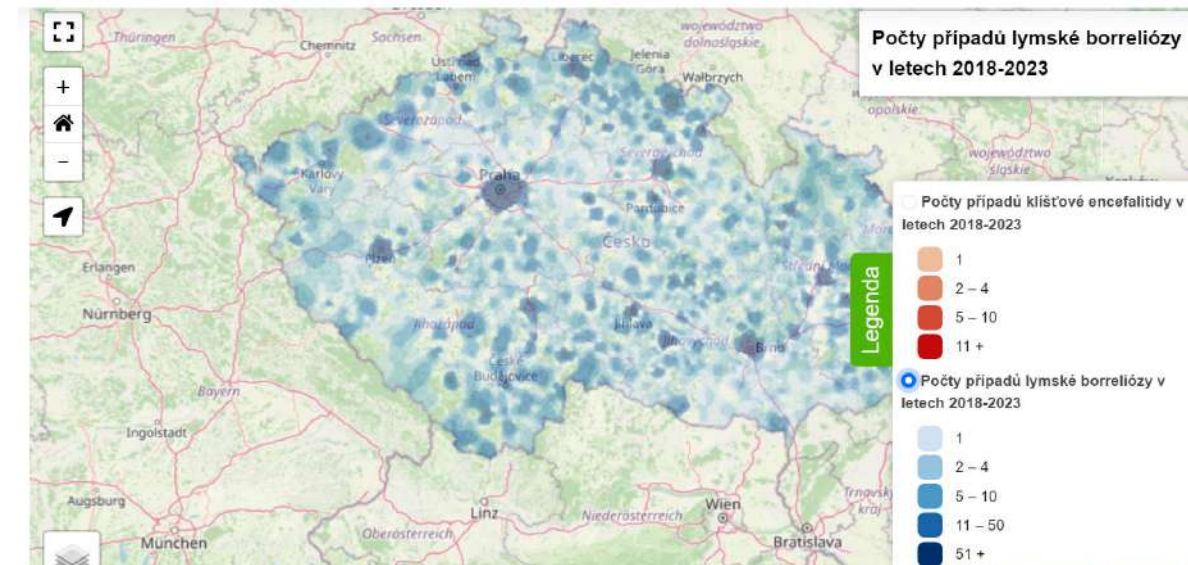
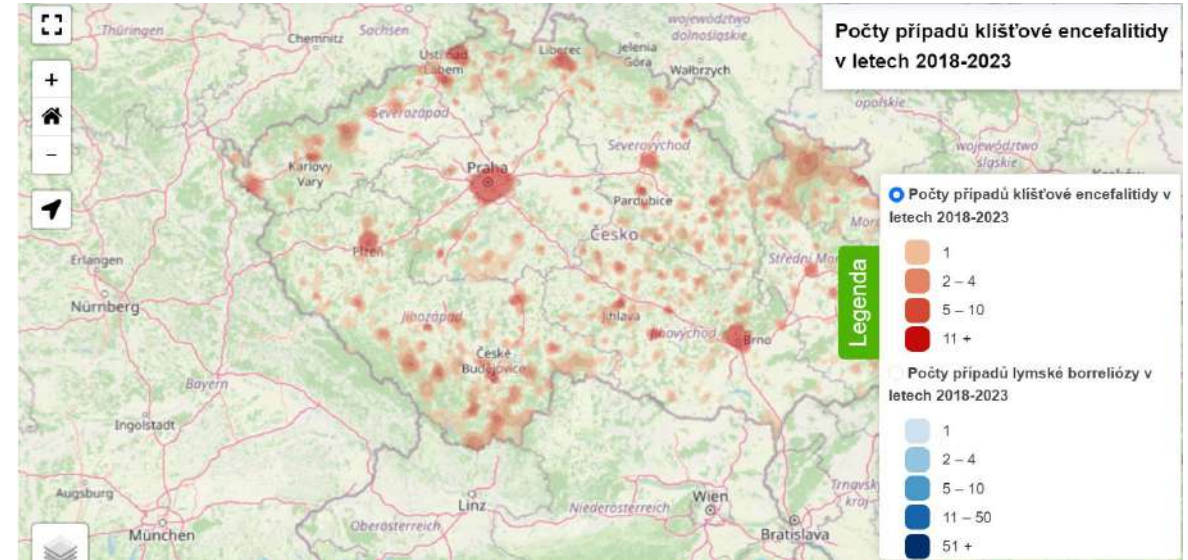
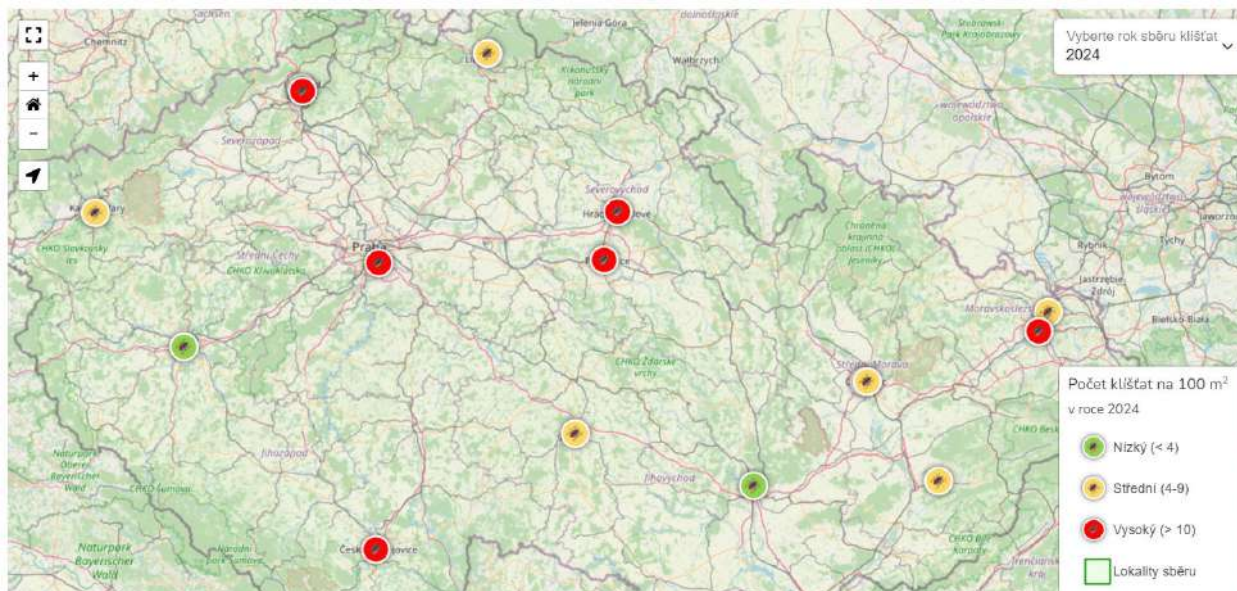
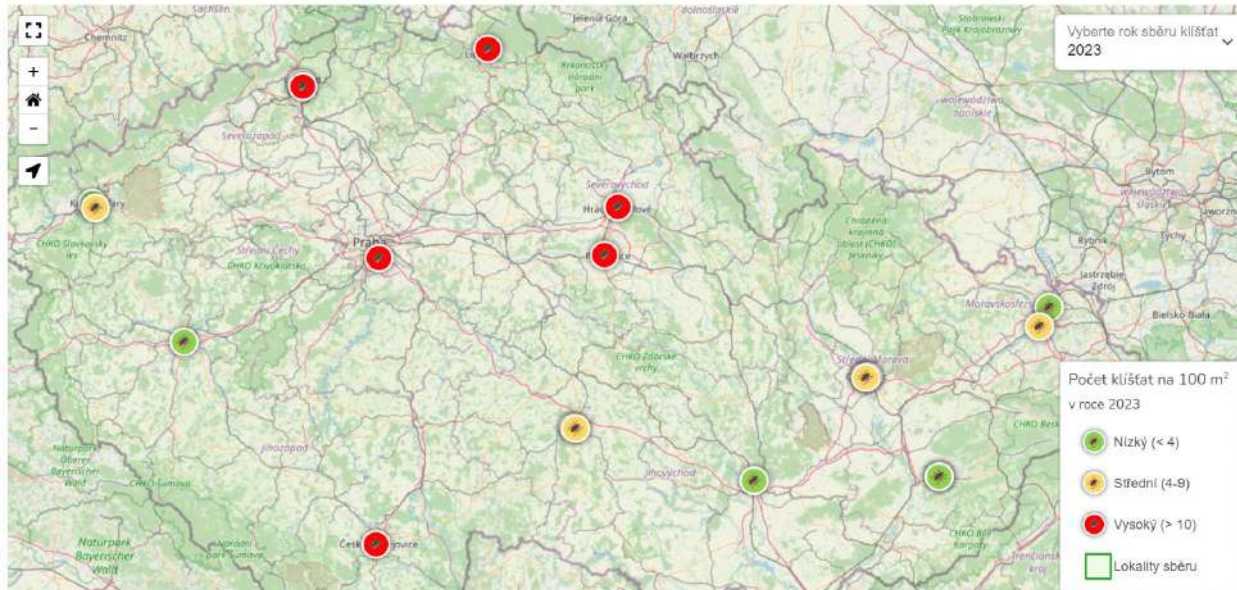


Amplifikovaná DNA hledaných bakterií na agarové elektroforéze.





Project: Ticks in the city





klisatata.ve.meste Sledování Zpráva

Příspěvky (32) Sledující (37) Sleduji (34)

Klíšťata ve městě | citizen science project

Vzdělávání

jsme skupina vědců z ČR

zajímáme se o biologii

provádíme celostátní výzkum na klíšťatech

PŘIPOJ SE K NÁM

klisatavemeste.vsb.cz



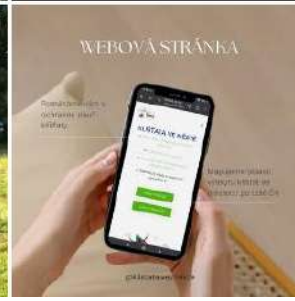
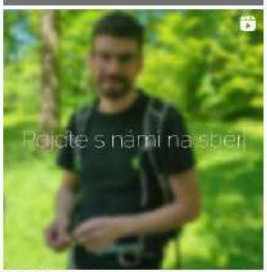
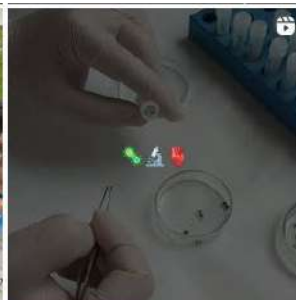
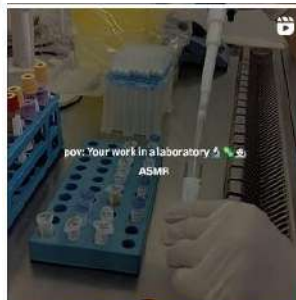
NÁŠ TÝM



POZNEJ NÁS ...



psali o nás



Forest Restoration Day- South Bohemia

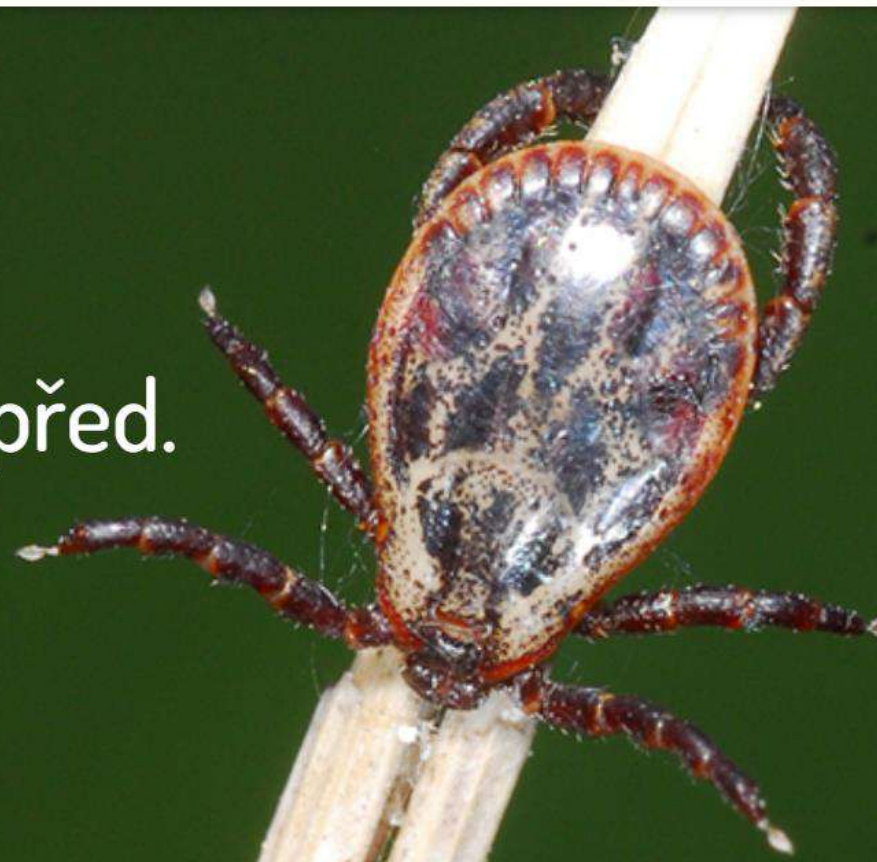


Najdi pijáka. Posuň náš výzkum vpřed.

Zapoj se do našeho projektu a staň se součástí přelomového výzkumu pijáka lužního ve střední Evropě.

[Chci se zapojit](#)

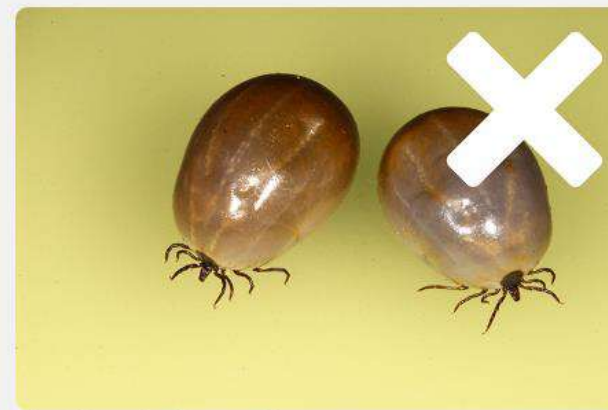
[Tiskové zprávy](#)



Samička pijáka lužního



Sameček pijáka lužního



Klíště obecné (*Ixodes ricinus*)



Klíště obecné (*Ixodes ricinus*)



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Our work makes sense!

**Thank you
for your attention!**

Rudenko Natasha

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