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National Recovery and Resilience Plan



OF THE REPUBLIC OF BULGARIA

Research group 3.1.3. GROWTH (Group of Researchers for Opportunities in Writing who are Talented in Healthcare)

APRIL 2023 – MARCH 2024

Assist. prof. Tsvetelina Velikova, MD, PhD, MPH

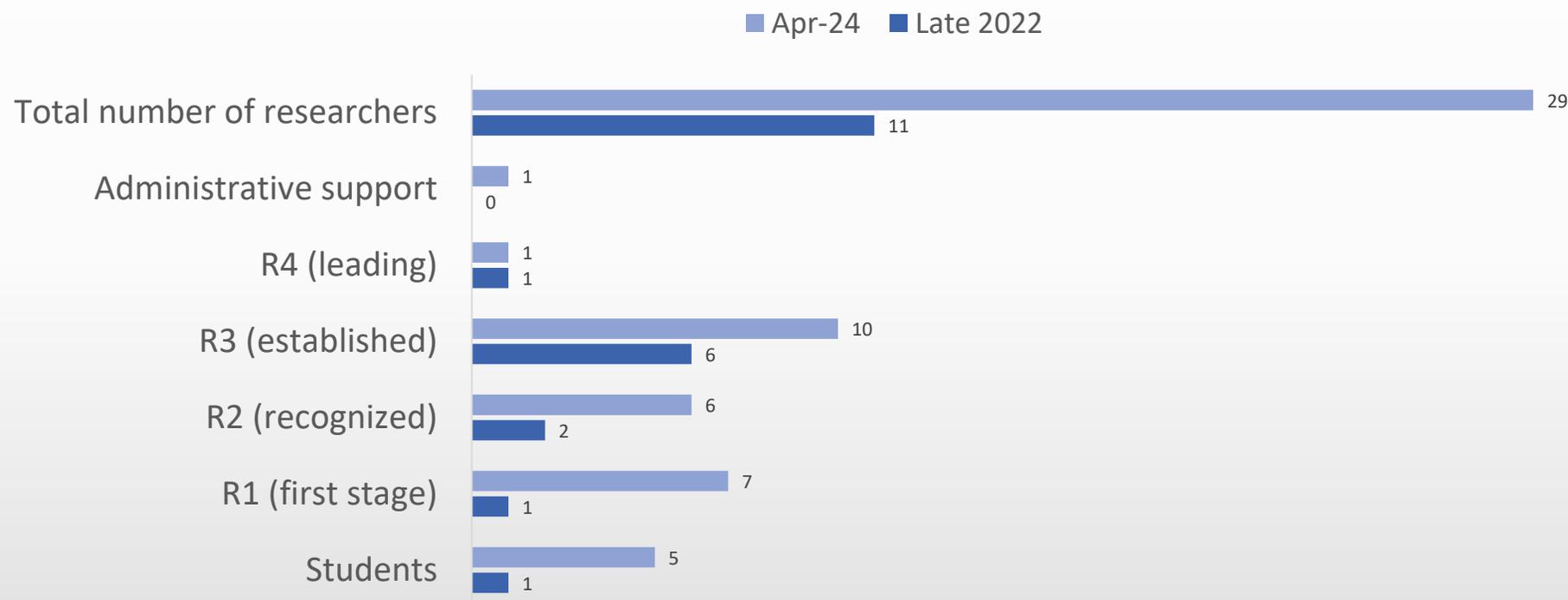
Medical Faculty, Sofia University St. Kliment Ohridski



- **RESEARCH UNIVERSITY:** Sofia University
- Research group №: 3.1.3
- Research group name: GROWTH (group of researchers for opportunities in writing who are talented in healthcare)
- Members: 29 (10 on contract + 19 volunteers)
- Main research area of the group: Medicine, Biology and Public Health
- Budget: EUR 564,102.56
- Period: 2023-2026
- Leading researcher: Tsvetelina Velikova



1. Appointment of personnel



- No equipment was purchased since it is not needed for the purposes of the research group.



3.1.3. GROWTH members



STUDENTS	R1 FIRST-STAGE			R2 RECOGNIZED			R3 ESTABLISHED			R4 LEADING	
Issa El Kaouri, Medical student V grade	Georgi V. Vasilev, MD, Neurology										
Konstantina Bakopoulou, Medical student V grade	Yoanna Slabakova, MD Infectious diseases	Niya Mileva, MD, PhD Cardiology	Kremena Naydenova, MD, PhD. Allergology	Dimitrina Miteva, PhD, Molecular biology and genetics	Snezhina Lazova, MD, PhD, Pediatrics, Pediatric pulmology					Tsvetelina Velikova, MD, PhD, MPH Clinical immunology	
Stavros Gerasoudis, Medical student VI grade	Vasilka Malinova, MD Pediatrics	Hristo Valkov, MD, PhD. Gastroenterology	Milena Peruhova, MD Gastroenterology	Milena Gulinac, MD, PhD Clinical pathology	Russka Shumnalieva, MD, PhD Rheumatology			TECH SECRETARY		Divna Shumanova	
Vyara Pavlova, Medical student VI grade	Mariya Kokudeva, MPharm	Mincho Vichev, Biochemistry	Hristiana Batselova, MD, PhD Epidemiology	Georgi H. Vasilev, MD, PhD, Clinical immunology	Theodor Todorov, PhD, Molecular biology, genetics					Emilia Naseva, PhD, Public health, medical statistics	
Ralitsa Gesheva, Medical student VI grade	Dayana Abousaid, MD	Anita Nikolova, Molecular biology	Antoaneta Mihova, Immunology, hematology	Latchezar Tomov, PhD Mathematics, statistics, IT	Georgi Nikolaev, PhD Cell biology					Lyubomir Chervenkov. MD, PhD Diagnostic imaging	

10 researchers and 1 technical secretary have a contract at the project (in dark outlines)

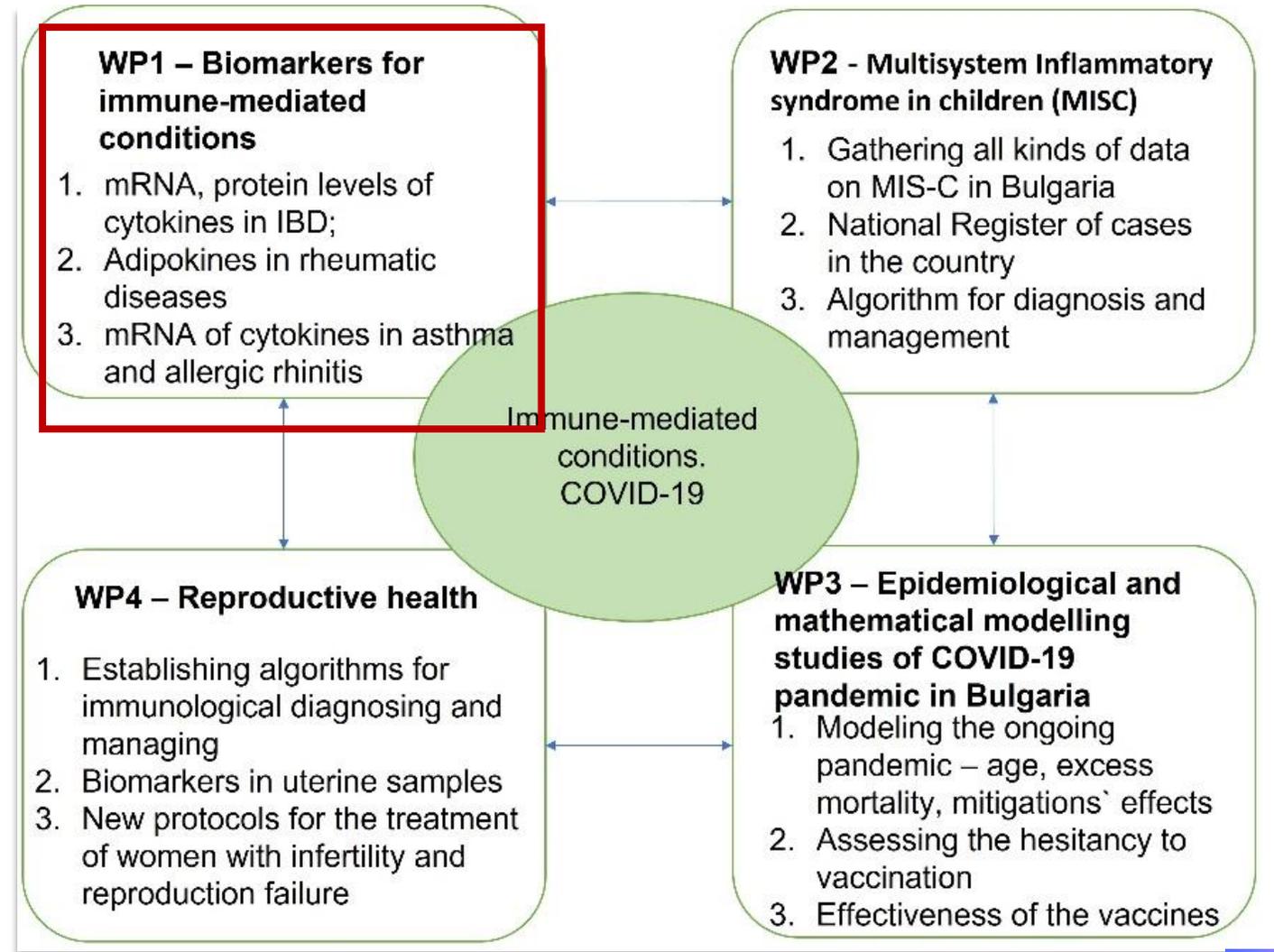


2. Substantial research activities

- The research program is in the field of medical and biological sciences and public health, with four main areas:
 - (1) biomarkers in immune-mediated conditions;
 - (2) multisystem inflammatory syndrome in children (MIS-C);
 - (3) COVID-19 pandemic and COVID-19 vaccines;
 - (4) Reproductive health



Research activities and achievements

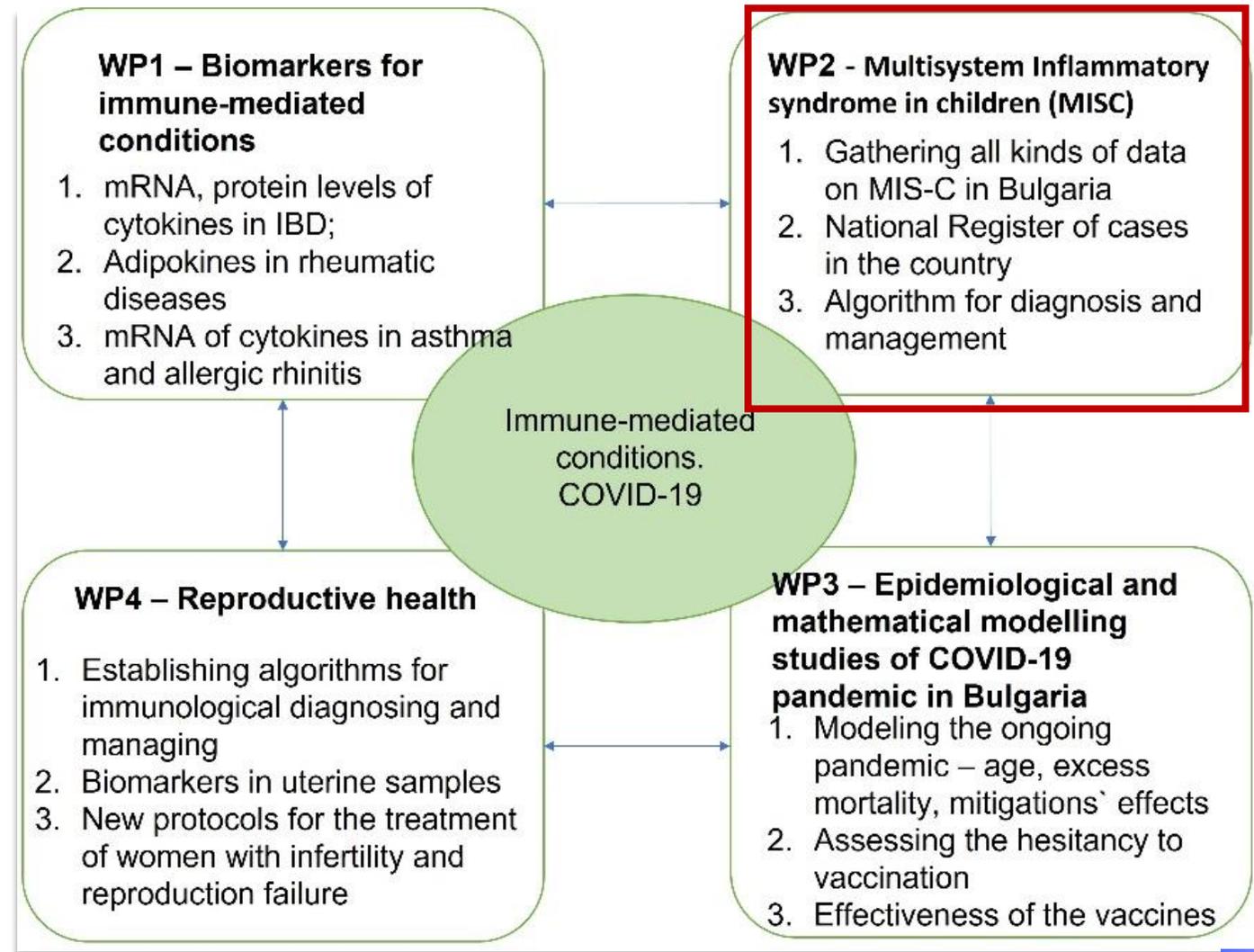


• WP 1 Biomarkers in immune-mediated diseases

We are interested in discovering new biomarkers but also in validating and implementing not so popular and established biomarkers into the practice and evaluating their usefulness and significance.

1.1. Patients recruitment; collecting of medical data; frozen biological samples (if applicable);	01.2023 – 08.2023	• Completion - 90% (slight delay with the publication)
1.2. Performing investigations – assessment of mRNA and protein levels of a wide range of cytokines in the mucosa and peripheral blood of patients with inflammatory bowel disease (IBD); analyzing data; preparing publications	09.2023 – 12.2024	• Completion – 40% (on schedule)
1.3. Performing investigation - adipokines (i.e., Meteorin-like (Metrnl), Follistatin-like-1 protein (FSTL1), etc.) in samples of patients with rheumatic disease; analyzing data; preparing publications	01.2024 – 06.2024	• Completion – 30% (on schedule)
1.4. Performing investigation of mRNA of a wide range of cytokines in peripheral blood and nasal lavage of patients with asthma and allergic rhinitis	06.2024 – 12.2024	• Completion – 60% (ahead of schedule)

Research activities and achievements



• WP 2 Multisystem inflammatory syndrome in children (MIS-C)

2.1. MIS-C patients recruitment, collecting medical data, frozen samples (when applicable)	01.2023 – 12.2024	• Completion - 80% (ahead of schedule)
2.2. Creating a register of MIS-C cases in Bulgaria	01.2023 – 12.2025	• Completion - 50% (ahead of schedule)
2.3. Immunological characterization of MIS-C patients; performing immunological and other testing	01.2023 – 12.2024	• Completion - 50% (on schedule)
2.4. Statistical analysis of the gathered data – focusing on different organs and systems – i.e., neurological, cardiac, nephrological involvement, etc.	01.2023 – 12.2025	• Completion: 50% (on schedule)
2.5. Proposing a generally accepted algorithm for the diagnosis and treatment of children with MIS-C	06.2025 – 12.2025	Not yet started.
2.6. Preparing informative materials – posts, brochures, key messages for media	01.2025 – 12.2025	Not yet started.

WP2 Published papers

11



Article

Clinical and Laboratory Manifestation of Gastrointestinal Involvement in MIS-C: A Single-Center Observational Study

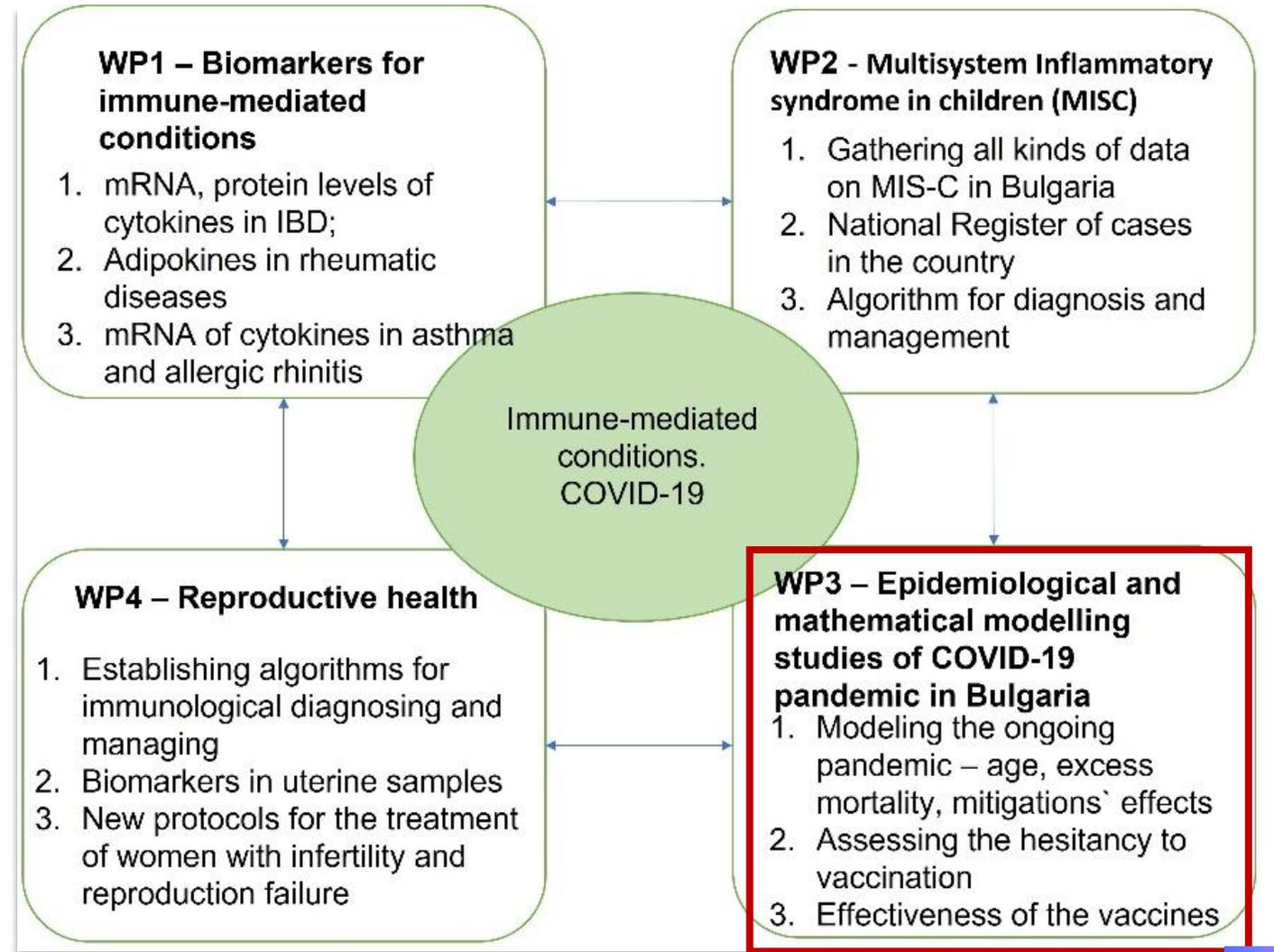
Snezhina Lazova ^{1,2,*} , Latchezar Tomov ³ , Dimitrina Miteva ⁴ and Tsvetelina Velikova ⁷ 

Observational Study > Medicina (Kaunas). 2023 Dec 14;59(12):2175.
doi: 10.3390/medicina59122175.

Cardiovascular Manifestations of Multisystem Inflammatory Syndrome in Children: A Single-Center Bulgarian Study

Niya Mileva ¹, Georgi H Vasilev ^{2 3}, Borislav Ganev ⁴, Lyubomir Chervenkov ^{5 6},
Hristiana Batselova ⁷, Iren Tzotcheva ⁸, Latchezar Tomov ^{3 9}, Tsvetelina Velikova ³,
Snezhina Lazova ^{3 8 10}

Research activities and achievements



• WP 3 COVID-19 pandemic and COVID-19 vaccines

3.1. Analysis of the pandemic in Bulgaria based on the official epidemiological data for morbidity, mortality and vaccinations rate in the country	01.2023 – 06.2023	• Completion - 100%
3.2. Modeling and predicting the ongoing pandemic with little or no information about different virus variants and their incubation periods	06.2023-12.2023	• Completion - 90% (a slight delay in the publications)
3.3. Modeling of the role of different age groups in COVID-19 transmission	06.2023-12.2023	• Completion – 60% (behind the schedule with the publications)
3.4. Modeling the relationship between an ongoing pandemic and excess mortality	01.2024 – 06.2024	• Completion - 50% (on schedule)
3.5. Modeling the influence of COVID-19 on other epidemics (i.e., flu, varicella, etc.)	01.2024 – 06.2024	• Completion - 30% (on schedule)
3.6. Studying the effects of different mitigation efforts and measures	01.2024 – 12.2024	• Completion - 30% (on schedule)
3.7. Assessing the hesitancy vs. willingness to vaccinate in different groups of people and patients. Determining and evaluating differences and factors that affect hesitancy	06.2023 – 06.2025	• Completion – 40% (on schedule)
3.8. Effectiveness of vaccines against SARS-CoV-2 in Bulgaria assessed by questionnaires and immunological studies (i.e., humoral and cellular immunity against COVID-19) in different populations	01.2023 – 06.2026	• Completion - 65% (ahead of schedule)

WP3 Published papers



[World J Clin Cases](#). 2023 Oct 16; 11(29): 6974–6983.

PMCID: PMC10631421

Published online 2023 Oct 16. doi: [10.12998/wjcc.v11.i29.6974](https://doi.org/10.12998/wjcc.v11.i29.6974)

PMID: [37946767](https://pubmed.ncbi.nlm.nih.gov/37946767/)

Applications of time series analysis in epidemiology: Literature review and our experience during COVID-19 pandemic

[Latchezar Tomov](#), [Lyubomir Chervenkov](#), [Dimitrina Georgieva Miteva](#), [Hristiana Batselova](#), and [Tsvetelina Velikova](#)

> [World J Exp Med](#). 2023

Latchezar P. Tomov¹✉, Hristiana Batselova^{2,3}, and Tsvetelina Velikova⁴

Author Proof
Journal

COVID 19-RELATED FACTORS THAT INFLUENCE THE DEVELOPMENT OF PNEUMOMEDIASTINUM

Apr 2023 · [Anaesthesiology and...](#)

Lab: [GROWTH study_group](#)

[World J Clin Cases](#). 2023 Mar 6;11(7):1528-1548
ology

Velikova



Variant-Specific Gastrointestinal Symptoms of

[Review](#) > [Biomedicines](#). 2023 Oct 17;11(10):2813. doi: [10.3390/biomedicines11102813](https://doi.org/10.3390/biomedicines11102813).

Blood Coagulation and Thrombotic Disorders following SARS-CoV-2 Infection and COVID-19 Vaccination

[Metodija Sekulovski](#)^{1,2}, [Niya Mileva](#)³, [Georgi Vasilev Vasilev](#)^{2,4}, [Dimitrina Miteva](#)^{2,5}, [Milena Gulinac](#)^{2,6}, [Monika Peshevska-Sekulovska](#)^{2,7}, [Lyubomir Chervenkov](#)⁸, [Hristiana Batselova](#)⁹, [Georgi Hristov Vasilev](#)^{2,10}, [Latchezar Tomov](#)^{2,11}, [Snezhina Lazova](#)^{2,12,13}, [Iren Tzocheva](#)⁵, [Tsvetelina Velikova](#)², [Dobrin Vassilev](#)¹⁴



Submit a Manuscript: <https://www.fapublishing.com>

DOI: [10.5306/wjco.v14.i9.343](https://doi.org/10.5306/wjco.v14.i9.343)

Effectiveness and safety of COVID-19 vaccines in patients with oncological diseases: State-of-the-art

[Nedelcho Ivanov](#), [Boris Krastev](#), [Dimitrina Georgieva Miteva](#), [Hristiana Batselova](#), [Tsvetelina Velikova](#)

COVID-19: Role of children in mathematical modeling

[Latchezar Tomov](#)¹, [Hristiana Batselova](#)², [Iren Tzocheva](#)⁵, [Tsvetelina Velikova](#)

Endothelial Dysfunction and Thrombotic Complications in COVID-19 Patients with Thrombophilia: A Narrative Review

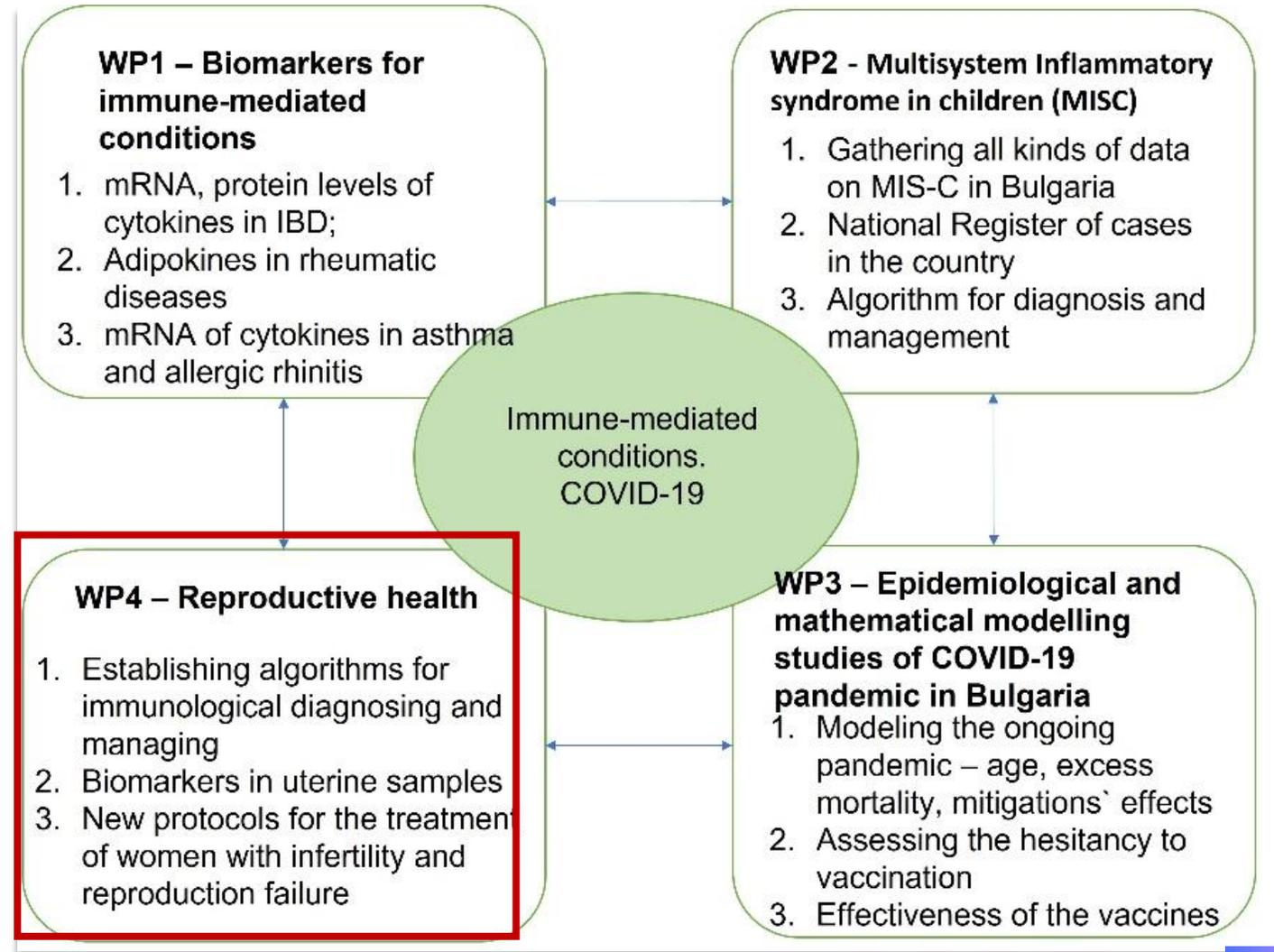
[Biomedicines](#) 2023, 11(9), 2458; <https://doi.org/10.3390/biomedicines11092458>

by [Metodija Sekulovski](#)^{1,2,*}✉, [Niya Mileva](#)³✉, [Lyubomir Chervenkov](#)⁴✉, [Monika Peshevska-Sekulovska](#)^{2,5}✉, [Georgi Vasilev Vasilev](#)^{2,6}✉, [Georgi Hristov Vasilev](#)^{2,7}✉, [Dimitrina Miteva](#)^{2,8}✉, [Latchezar Tomov](#)^{2,9}✉, [Snezhina Lazova](#)^{2,10,11}✉, [Milena Gulinac](#)^{2,12}✉ and [Tsvetelina Velikova](#)²✉

The End or a New Era of Development of SARS-CoV-2 Virus: Genetic Variants Responsible for Severe COVID-19 and Clinical Efficacy of the Most Commonly Used Vaccines in Clinical Practice

[Dimitrina Miteva](#)¹, [Meglena Kitanova](#)¹, [Hristiana Batselova](#)², [Snezhina Lazova](#)^{3,4}, [Lyubomir Chervenkov](#)⁵, [Monika Peshevska-Sekulovska](#)^{6,7}, [Metodija Sekulovski](#)^{7,8}, [Milena Gulinac](#)⁹, [Georgi V Vasilev](#)¹⁰, [Luchesar Tomov](#)¹¹, [Tsvetelina Velikova](#)⁷

Research activities and achievements



• WP 4 Reproductive health

Focus on improving the diagnosis of the immune-mediated factors for infertility, establishing uniform protocols for treatment and follow-up and increasing the results of assisted reproductive technologies (ART).

4.1 Analysis of the current concepts on diagnostics and therapy of reproductive diseases	01.2024 – 06.2024	• Completion - 50% (on schedule)
4.2 Assessing useful biomarkers and algorithms for diagnosis and management of immune-mediated reproductive failure (i.e., evaluating the current, improving and identifying new ones etc.)	06.2024 – 06.2025	Not yet started.
4.3. Assessing the significance of investigating immune biomarkers locally in uterine samples and comparing them with the peripheral blood markers	01.2025 – 12.2025	Not yet started.
4.4. Creating and evaluating new protocols for immunotherapy (i.e., IVIG, corticosteroids, etc.) in women with infertility	01.2025 – 06.2026	Not yet started.

WP4 Published papers

17

Review > [Antibodies \(Basel\)](#). 2023 Mar 2;12(1):20. doi: 10.3390/antib12010020.

Intravenous Immunoglobulins as Immunomodulators in Autoimmune Diseases and Reproductive Medicine

Tsvetelina Velikova¹, Metc
Monika Peshevska-Sekulov

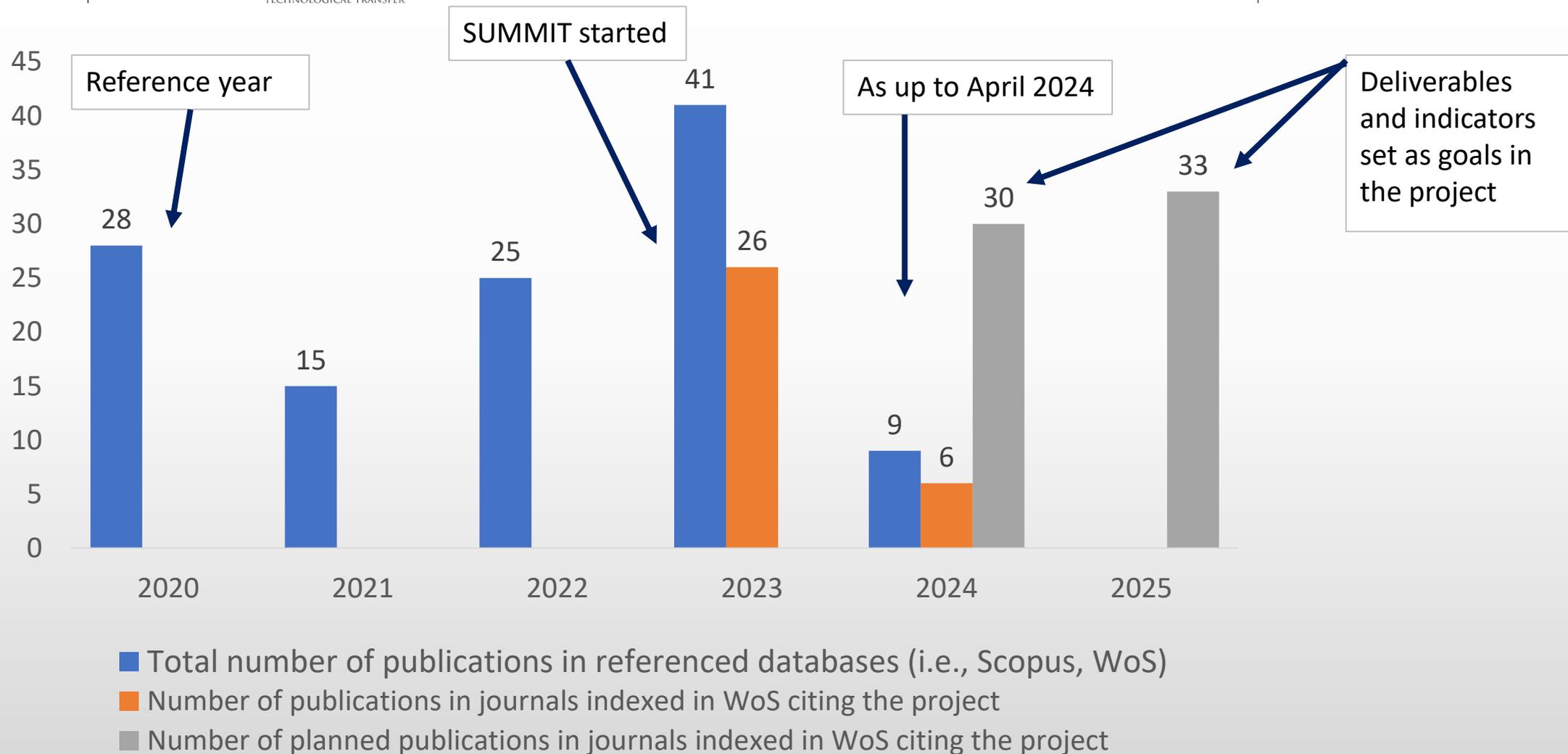
Review > [Antibodies \(Basel\)](#). 2023 Dec 6;12(4):79. doi: 10.3390/antib12040079.

Navigating the Challenges of Gluten Enteropathy and Infertility: The Role of Celiac-Related Antibodies and Dietary Changes

Monika Peshevska-Sekulovska^{1 2}, Milena Gulinac³, Radoslav Rangelov⁴, Desislava Docheva⁴,
Tsvetelina Velikova¹, Metodija Sekulovski^{1 4 5}



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OF THE REPUBLIC OF BULGARIA

“Make having fun a top priority. Depriving yourself of fun leads to burn out, not success.”

Dave Crenshaw





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OF THE REPUBLIC OF BULGARIA

*Wishing you all a joyous and blessed
Easter and national holiday!*

*May this season bring you peace,
happiness, and cherished moments
with loved ones.*

