DOI: https://doi.org/10.18554/rbcti.v8i1.7105

Editorial

Interdisciplinary research: advancing knowledge and sustainable solutions

Beatriz Gaydeczka

Professor of the Professional Master's Program in Technological Innovation,
Federal University of the Triângulo Mineiro, Uberaba-MG, Brazil.
Orcid: 0000-0002-2604-6504 E-mail: beatriz.gaydeczka@uftm.edu.br

Esteemed readers,

In this issue of the Brazilian Journal of Science, Technology and Innovation (Revista Brasileira de Ciência, Tecnologia e Inovação (RBCTI), we present a selection of studies that reflect the importance of the interdisciplinary approach to understanding and solving the complex challenges we face in different areas of knowledge. This journal aims to promote quality research and foster dialogue between different disciplines, and the articles in this issue highlight the relevance of this approach and its impacts in areas such as aquatic ecology; animal health; civil engineering; socio-environmental impact assessment; cardiovascular health; the association between climate, socio-economic factors and the spatial distribution of arboviruses; and energy.

The contemporary world is characterized by challenges that have transcended the traditional boundaries of academic disciplines. To understand and address these challenges, it is essential that research combines knowledge, methods and perspectives from different fields of study.

The first study we would like to highlight is "Ichthyofaunistic composition of Veadinho Brook, tributary of Lower Rio Grande River microbasin, Minas Gerais State, Brazil". This research investigates the composition of the ichthyofauna in a stream that is a tributary of the Lower Rio Grande, in Minas Gerais. By analyzing the different orders, families and species of fish found in the stream, the researchers highlight the adaptability of the species to homogeneous environments. This highlights the importance of understanding aquatic ecology, not only for biodiversity conservation, but also for making informed decisions about the use and management of water resources (GAIA DA SILVA *et al.,* 2023).

In the second article "Immunosensor for bovine anaplasmosis diagnosis on graphite platform functionalized with poly (3-hydroxybenzoic acid)", the combination of knowledge and techniques from various disciplines was essential for the development of innovative animal health solutions. The study describes the development of an electrochemical immunosensor for the diagnosis of bovine anaplasmosis. The immunosensor uses a graphite platform functionalized with poly(3-hydroxybenzoic acid) as a transducer to detect antibodies against the Am1 surface protein of Anaplasma marginale, the causative agent of anaplasmosis (FERREIRA *et al.,* 2023).

Next, the article "Use of computer programming for the development of a CAD-CAE system on the Revit platform applied in urban drainage projects" demonstrates how interdisciplinarity can improve urban planning and infrastructure. By combining Python programming and CAD/CAE tools, the researchers have developed a tool that speeds up the sizing of urban drainage conduit networks. This not only saves time, but also contributes to urban sustainability by facilitating the analysis of factors such as minimum pipe slopes and the relationship between the water table and the diameter of the conduits (LEMOS SILVA; VENÂNCIO, 2023).

DOI: https://doi.org/10.18554/rbcti.v8i1.7105

Environmental preservation and sustainable urban development are central themes in today's society, and the article "Implementation of the Municipal Integrated Urbanization Program in the Camaçari River Basin: socio-environmental assessment" addresses these issues in an interdisciplinary way. The study evaluates the results of implementing an urbanization program in a river basin, highlighting improvements in infrastructure and sanitation. The data shows increases in water supply, sewage connections and a reduction in diseases related to inadequate sanitation, highlighting the positive impacts of integrated urbanization programs (VIEIRA MIRA; RODRIGUES, 2023).

The article "Tube hydroforming simulation to analyze structural integrity of stent, balloon and artery during crimping and angioplasty" illustrates the importance of the interdisciplinary approach in medical and engineering research. The study uses finite element simulations to analyze the complete process of stent implantation in arteries, allowing the identification of areas of thinning and wrinkling in the structures. This research contributes to the development of safer and more effective medical devices, which play a crucial role in cardiovascular health (GUIMARÃES; ARAUJO; OLIVEIRA, 2023).

The study "Climate, socioeconomic factors and spatial distribution of some worldwide arboviruses: a review of the literature" reviews the literature on the association between climate, socioeconomic factors and the spatial distribution of arboviruses such as Dengue, Zika and Chikungunya. The results highlight the influence of climate, such as temperature and rainfall, on the distribution of vectors and the transmission of pathogens. Populations in more socially vulnerable regions are at greater risk of falling ill from arboviruses (PARRA; RIBEIRO; UEHARA, 2023).

Finally, the energy issue is fundamental to sustainable development, and the article "The current Brazilian energy model: 2016 to 2020" offers a comprehensive analysis of the energy model in Brazil during this period. The study highlights the diversity of energy sources used in the country, with an emphasis on hydroelectric potential. This analysis is vital in a world where the transition to cleaner and more sustainable energy sources is a priority. Understanding the dynamics of the energy sector is essential to guaranteeing a reliable and economical energy supply (MELLO; SANTOS SILVA; LUZ, 2023).

In summary, this issue of RBCTI reflects the importance of the interdisciplinary approach in research and innovation, especially in technological areas. The studies highlighted demonstrate how collaboration between different disciplines can lead to significant advances in our understanding of complex problems and the search for sustainable solutions. As we face global challenges such as climate change, public health and urban development, an interdisciplinary approach is becoming increasingly essential. The Brazilian Journal of Science, Technology and Innovation is proud to play a role in promoting this approach and disseminating research that has the potential to positively impact our society and our world.

We hope that this issue will inspire new collaborations and interdisciplinary research, driving progress in the areas covered by the articles and beyond. As we face complex challenges, interdisciplinarity will continue to play a crucial role in our search for innovative and sustainable solutions.

We would like to thank all the reviewers, researchers and authors for contributing to this edition of RBCTI and for the hard work they put into promoting knowledge. Together, we can continue to move towards a more promising and sustainable future.

DOI: https://doi.org/10.18554/rbcti.v8i1.7105

REFERENCES

GAIA DA SILVA, R.; RICARDO DA SILVA CAMARGO, P.; DE OLIVEIRA QUIRINO, M.; DE SOUZA, F. Ichthyofaunistic composition of Veadinho Brook, tributary of Lower Rio Grande River microbasin, Minas Gerais State, Brazil. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 4–15, [s.d.]. DOI: 10.18554/rbcti.v8i1.6517. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6517. Acesso em: 23 out. 2023.

FERREIRA, D. C.; ABRAHÃO JÚNIOR, O.; TADEU SOARES DE OLIVEIRA JÚNIOR, R.; DE SOUZA SANTOS, P.; BRITO MADURRO, A. G.; MARCOS MADURRO, J. Immunosensor for bovine anaplasmosis diagnosis on graphite platform functionalized with poly (3-hydroxybenzoic acid). **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 14–29, [s.d.]. DOI: 10.18554/rbcti.v8i1.6505. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6505. Acesso em: 23 out. 2023.

LEMOS SILVA, W.; VENÂNCIO, S. de S. Use of computer programming for the development of a CAD-CAE system on the Revit platform applied in urban drainage projects. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 30–44, [s.d.]. DOI: 10.18554/rbcti.v8i1.6619. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6619. Acesso em: 23 out. 2023.

VIEIRA MIRA, J.; RODRIGUES, F. de M. Implementation of the Municipal Integrated Urbanization Program in the Camaçari River Basin: socio-environmental assessment. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 45–60, [s.d.]. DOI: 10.18554/rbcti.v8i1.6587. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6587. Acesso em: 23 out. 2023.

GUIMARÃES, T. A.; ARAUJO, R. de; OLIVEIRA, S. A. G. de. Tube hydroforming simulation to analyze structural integrity of stent, balloon and artery during crimping and angioplasty. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 61–74, [s.d.]. DOI: 10.18554/rbcti.v8i1.6502. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6502. Acesso em: 23 out. 2023.

PARRA, G. E.; RIBEIRO, A. C.; UEHARA, S. C. S. A. Climate, socioeconomic factors and spatial distribution of some worldwide arboviruses: a review of the literature. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 75–95, [s.d.]. DOI: 10.18554/rbcti.v8i1.6971. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6971. Acesso em: 23 out. 2023.

MELLO, T. C. S.; SANTOS SILVA, L. R.; LUZ, M. S. The current Brazilian energy model: 2016 to 2020. **Revista Brasileira de Ciência, Tecnologia e Inovação**, Uberaba - MG, v. 8, n. 1, p. 96–105, [s.d.]. DOI: 10.18554/rbcti.v8i1.6584. Disponível em: https://seer.uftm.edu.br/revistaeletronica/index.php/rbcti/article/view/6584. Acesso em: 23 out. 2023.