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International Collaborative ReDesign Canvas Training for Starting Fashion Brands through Technopreneurship

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ABSTRACT

Background: The global fashion industry increasingly requires graduates who possess not only fashion design competencies but also entrepreneurial capabilities and an understanding of sustainable fashion principles. However, opportunities for students to systematically develop sustainable, market-oriented fashion business models remain limited. In response to this need, an international collaboration between Universitas Negeri Jakarta (UNJ), Indonesia, and Politeknik Ibrahim Sultan (PIS), Malaysia, was conducted through the International Collaborative ReDesign Canvas Training for Launching Fashion Brands through Technopreneurship program.
Aims: This community service program aimed to strengthen students' technopreneurship competencies and enhance their knowledge and awareness of sustainable fashion principles.
Methods: The program involved 38 students from PIS and employed a participatory learning approach through interactive discussions, instructional sessions, case studies, and practical exercises using the Business Model Canvas (BMC) and ReDesign Canvas. The training was designed to help students identify business opportunities, develop innovative fashion brand concepts, formulate value propositions, and integrate sustainability principles into their potential business models. Prior to the training, students completed a pre-test to assess their baseline knowledge of business models and sustainable fashion concepts. Upon completing the training series, a post-test was conducted to evaluate improvements in students' knowledge and skills. The comparison between pre-test and post-test results served as the primary indicator of program effectiveness, supported by observations of students engagement and their ability to apply the BMC and ReDesign Canvas.

Result: The evaluation results indicated an improvement in students' knowledge and skills regarding business model development and the integration of sustainability principles into fashion business concepts. The program also strengthened students' initial entrepreneurial capacity and readiness while facilitating knowledge exchange and international academic collaboration between UNJ and PIS. For long-term sustainability, continued mentoring, entrepreneurial communities, and follow-up activities are recommended to support the transformation of acquired knowledge into entrepreneurial projects, business prototypes, and sustainable fashion ventures. This continuity is expected to contribute to the development of young technopreneurs and support relevant Sustainable Development Goals (SDGs).

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1. Introduction

The global fashion industry is currently undergoing a transformation driven by digital technology advancements, shifting consumer behaviors, and growing demands for sustainable business practices (Casciani *et al.,* 2022). These conditions create a need for professionals who possess not only technical design competence but also technopreneurship skills, digital technology proficiency, and an understanding of sustainable fashion principles (Natari & Raharja, 2022; Purnama *et al.,* 2023; Raharja *et al.,* 2021; Rêgo *et al.,* 2024). Higher education institutions play a strategic role in preparing graduates capable of adapting to these changes through competency development that integrates creativity, innovation, entrepreneurship, and sustainability (Liu *et al.,* 2025; Purnama, 2021; Purnama *et al.,* 2022). Therefore, enhancing students' capacity to develop technology-based fashion business models through technopreneur orientation has become an increasingly urgent need (Budiarti *et al.,* 2024; Jung & Suh, 2024; Patnaik, 2023; Zakaria *et al.,* 2022).

Politeknik Ibrahim Sultan (PIS), Malaysia, is a vocational higher education institution focused on competency development in the fields of design and the creative industries. Observations, discussions with lecturers, and student interviews reveal that students possess strong skills in design, aesthetics, and fashion production processes. However, these competencies are not yet matched by the ability to develop business models, formulate branding strategies, or leverage digital technology (Corvello *et al.,* 2022), as well as applying sustainability principles in fashion product development (Bouwmans *et al.,* 2024; Liang *et al.,* 2025). The current curriculum places greater emphasis on upstream aspects, such as design and production while downstream elements like business development, marketing, entrepreneurship, and sustainability have not yet been optimally integrated (Marniati & Witcjaksono, 2020; Nasir *et al.,* 2025; Weiss *et al.,* 2021). Consequently, students struggle to transform design ideas into viable, innovative, and market-competitive business concepts (Huynh, 2022; Weis & Nikolić, 2024). This situation highlights a clear need for a more applied and contextual learning model to strengthen students' technopreneurship competencies.

Research indicates that success in fashion education is no longer determined solely by technical skill mastery but also by the ability to integrate innovation, technology, entrepreneurship, and sustainability into the learning process. The Business Model Canvas (BMC) approach has been widely adopted as a tool to assist aspiring entrepreneurs in systematically structuring their business models (Bachmann *et al.,* 2025; Dudhat & Dolan, 2025), Meanwhile, the development of the ReDesign Canvas provides a more comprehensive framework for integrating aspects of innovation, value addition, sustainability, ethics,

and technology into fashion business development (Kozlowski *et al.,* 2018; Si *et al.,* 2023). Furthermore, international collaboration in academic activities has proven capable of enhancing the quality of learning through knowledge transfer, the exchange of experiences, and the expansion of academic and professional networks (Armariena *et al.,* 2025; Jakubakynov *et al.,* 2026; Ul Hassan *et al.,* 2025). Therefore, training based on the Business Model Canvas (BMC) and ReDesign Canvas is considered relevant to addressing the needs of Politeknik Ibrahim Sultan students as they face the challenges of the global fashion industry.

The community service team from Universitas Negeri Jakarta has previously conducted various activities related to technopreneurship, sustainable fashion, and the development of the Business Model Canvas and ReDesign Canvas for students, business practitioners, and the general public. Furthermore, the team has established academic partnerships with various institutions. both domestic and international, including Politeknik Ibrahim Sultan (PIS) in Malaysia through collaborative efforts in education, research, and community service. This experience serves as the foundation for designing a training program that is structured, practical, and aligned with the partners' needs. Meanwhile, PIS is actively striving to enhance the quality of learning by strengthening international partnerships; however, there remains a need for a mentoring program that specifically integrates technopreneurship, digital technology, and sustainable fashion concepts into the development of students' business models.

Given this context, this Community Service Program aims to enhance the technopreneurship knowledge and skills of Politeknik Ibrahim Sultan students through training on the Business Model Canvas (BMC) and ReDesign Canvas, grounded in international collaboration (Kozlowski *et al.,* 2018). The program is implemented through pre-test stages, material delivery, interactive discussions, business model preparation practices, mentoring, results presentations, and post-tests to measure the increase in students ' understanding and skills. Through this activity, it is hoped that students will be able to develop fashion business models that are innovative, technology-based, market-oriented, and apply sustainability principles. Apart from increasing students competency, this program is also expected to strengthen the international partnership between Universitas Negeri Jakarta and Politeknik Ibrahim Sultan and contribute to the achievement of Sustainable Development Goals (SDGs), especially SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 17 (Partnership to Achieve the Goals).

Student involvement in the this Program has the potential to study collaborative projects, or implement the Independent Campus Learning (MBKM) policy in accordance with the provisions applicable at each university. Through this program, students gain contextual learning experience through direct involvement in developing a fashion brand based on technopreneurship and ReDesign Canvas. Apart from improving academic competence, students also develop various 21st century skills, such as critical thinking skills, creativity, communication, collaboration, leadership, problem solving, digital literacy, and the ability to work in cross-cultural teams through international collaboration.

In addition, outputs produced by students, such as Business Model Canvas (BMC), ReDesign Canvas, sustainable fashion brand concepts, and presentations (business pitching), can become academic and professional portfolios that support students' readiness to enter the world of work and the business world. Apart from that, the experience of international collaboration with the Politeknik Ibrahim Sultan, Malaysia, is an added value in building students' international portfolios, especially in developing innovative, technology-based and sustainable fashion brands.

2. Methods

This Community Service Program employs a participatory learning approach, positioning students as the central subjects of the learning process through active engagement at every stage of the activities in June 2026. This approach was selected to ensure students not only acquire theoretical knowledge but also develop skills. such as critical thinking and collaboration and learn to apply technopreneurship

concepts to sustainable fashion business development. These activities were carried out through a combination of community education, training, practical exercises, discussions, and collaborative mentoring involving three lecturers from the Univeritas Negeri Jakarta, Indonesia as well as five lecturers and 38 students from Politeknik Ibrahim Sultan, Malaysia. The program is implemented in the following stages:

2.1 Program Orientation and Pre-test

The initial stage begins with an orientation session to inform all students about the program's objectives, benefits, scope, schedule, and expected outcomes. This stage also introduces fundamental concepts regarding entrepreneurship, technopreneurship, the Business Model Canvas (BMC), the ReDesign Canvas, and sustainable fashion. Subsequently, a 10-question pre-test was conducted with 38 students to assess their baseline knowledge of the topics covered in the program. The pre-test results serve as a basis for determining the strategies for material delivery and mentoring throughout the training.

2.2 Entrepreneurship and Technopreneurship Material

The next stage involves presenting material on the fundamental concepts of entrepreneurship and technopreneurship. Topics include the characteristics of a technopreneur, business opportunities in the fashion industry, product innovation, the use of digital technology in business development, and the challenges facing the global fashion industry regarding digitalization and sustainability. The material is delivered interactively through lectures, Q&A sessions, and discussions, ensuring students gain a conceptual understanding before proceeding to the practical phase.

2.3 Business Model Canvas (BMC) Development Training

In this stage, students receive an explanation of the nine key components of the Business Model Canvas: customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. After grasping these concepts, students directly develop a Business Model Canvas based on their own fashion business ideas. During the practical sessions, the implementation team provided guidance to ensure students could identify market opportunities, formulate business strategies, and construct systematic, realistic business models.

2.4 Training on ReDesign Canvas Implementation

The next stage involved implementing the ReDesign Canvas, an evolution of the Business Model Canvas. students were guided to evaluate and refine their business models by integrating principles such as: Concept, Consumer, (de)branding, Circular design and economies, Business models, value proposition and innovation, Revenue streams and costs, Sourcing, Design and smart material selection, Prototypes and product development, Supply chain, Data management, and Stakeholders, alongside resource efficiency, product innovation, and the use of digital technology in production, marketing, and brand development. Through this stage, students gained an understanding that the success of a fashion business is determined not only by economic factors but also by social and environmental values.

2.5 Mentoring on BMC and ReDesign Canvas Development

After drafting the Business Model Canvas and ReDesign Canvas, students received direct mentoring from the community service team and lecturers from Politeknik Ibrahim Sultan. This mentoring was conducted through discussions, consultations, and feedback on the developed business models. The mentoring focused on refining value propositions, identifying target markets, formulating marketing strategies, integrating digital technology, and applying sustainability principles to fashion business

development, thereby ensuring the resulting business models were practical and aligned with industry needs.

2.6 Program Evaluation (Post-test)

The final stage of the activity involves a program evaluation using a post-test to measure the improvement in students ' knowledge and understanding after completing the entire training series. The evaluation of program effectiveness is based on a comparison of pre-test and post-test results, serving as the primary indicator of changes in students ' knowledge before and after the training intervention. Beyond cognitive measurement, the evaluation also incorporates observations of students engagement during the activities, their ability to construct a Business Model Canvas (BMC) and ReDesign Canvas, and their skills in integrating technopreneurship and sustainable fashion concepts into the business models they develop.

To strengthen the evaluation framework, the measurement of knowledge, understanding, and competence draws upon the revised Bloom's Taxonomy (Noushad, 2024). Within this framework, knowledge reflects the students ' ability to recall and recognize key concepts learned, while understanding is demonstrated through the ability to explain, interpret, and link technopreneurship concepts with sustainable fashion principles. Meanwhile, competence is evaluated based on the students ' ability to apply this knowledge practically specifically in constructing and developing the Business Model Canvas and ReDesign Canvas while integrating aspects of innovation, entrepreneurship, and sustainability.

Thus, the program evaluation focuses not only on improvements in pre-test and post-test scores but also considers changes in the students' ability to apply knowledge within a practical context. This approach aligns with the cognitive levels of Bloom's Taxonomy specifically remembering, understanding, applying, and creating enabling a more comprehensive evaluation. Consequently, combining test results, observations of students engagement, and assessments of the outputs (the BMC and ReDesign Canvas) provides a robust picture of the program's effectiveness in enhancing students ' knowledge, understanding, and competence regarding sustainable fashion business development. The evaluation results serve to assess the program's effectiveness and provide a basis for improving future community service activities (Dwijayanti *et al.*, 2023). Direct interaction creates an active learning atmosphere, allowing students to refine their models. Subsequently, a 10-question post-test was conducted with 38 students to assess their baseline knowledge of the topics covered in the program.

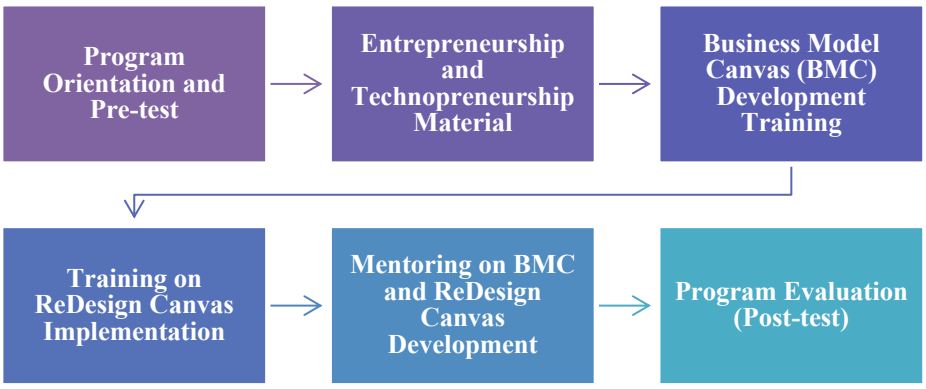


Figure 1. Participatory Learning Stage of this activity

3. Results and Dicussion

The Community Service Program, an international collaboration between Universitas Negeri Jakarta and Politeknik Ibrahim Sultan (PIS), Malaysia, was held face-to-face at Politeknik Ibrahim Sultan, Johor

Bahru, Malaysia. Students from the Fashion and Apparel Program participated in this program, preparing them to develop technopreneurship competencies in the fashion sector. The program consisted of several stages: program socialization, a pre-test, Business Model Canvas (BMC) and ReDesign Canvas training, practical business model development, mentoring, and a post-test to evaluate the training's effectiveness.

Before the training began, 38 students took a pre-test to identify their initial knowledge of entrepreneurship, technopreneurship, the Business Model Canvas (BMC), ReDesign Canvas, and sustainable fashion. The pre-test results indicated that most students had strong skills in design, material selection, and the fashion production process. However, some students still experienced difficulties developing design ideas into systematic business models, determining marketing strategies, identifying market opportunities, utilizing digital technology as a business support, and integrating sustainability principles into fashion brand development. These identification results served as the basis for the community service team to adapt training materials and strategies to meet the needs of the students.

The main phase of the activity, the Business Model Canvas (BMC) and ReDesign Canvas training, was conducted using a Participatory Learning approach, a learning approach that positions students as active students throughout the learning process. The training was designed with approximately 20% material delivery and 80% practice, allowing students to gain hands-on learning experiences (learning by doing). During the training, the speakers not only delivered the material but also provided various examples of successful fashion business models integrating innovation, technology, and sustainability.

Furthermore, students learned how to develop a Business Model Canvas (BMC) as the basis for designing a business model. The community service team explained the nine main components of the Business Model Canvas, and then students directly developed a business model based on their fashion business idea. During the internship, students were guided to identify customer segments, formulate value propositions, determine distribution channels, build customer relationships, and identify key resources, key activities, business partners, cost structures, and revenue sources. Direct mentoring was provided so students could discuss and find solutions to any challenges they encountered.

After understanding the Business Model Canvas, students continued the activity by learning ReDesign Canvas as a tool to refine their developed business models. At this stage, students were guided to integrate sustainable fashion principles into every aspect of the business model, including the use of environmentally friendly materials, resource efficiency, the application of ethical fashion concepts, circular fashion, and the use of digital technology in production and marketing processes. Through this internship, students began to understand that fashion business development is not only oriented towards economic profit but must also provide added value for the environment.

Throughout the practical phase, the community service team, together with lecturers from Politeknik Ibrahim Sultan, provided intensive guidance to each student. This support was delivered through direct discussions, consultations, and feedback on the Business Model Canvas and ReDesign Canvas developed by the students. They received guidance on strengthening product value propositions, defining more specific target markets, selecting appropriate marketing strategies, and developing business concepts that are more innovative and sustainable (Dwijayanti *et al.,* 2023). Direct interaction fostered an active learning environment, enabling students to refine their business models based on feedback from the resource persons.

Program evaluation was conducted via a post-test following the completion of the entire training series. Post-test results indicated an improvement in students ' understanding of concepts such as entrepreneurship, technopreneurship, the Business Model Canvas, the ReDesign Canvas, and sustainable fashion. Furthermore, observations during the training revealed that students became more capable of systematically structuring business models, identifying market opportunities, leveraging digital technology within business strategies, and integrating sustainability aspects into fashion brand development. Active participation during discussions, practical sessions, and mentoring demonstrated

that the Participatory Learning approach effectively enhanced student engagement in the learning process.

This activity also benefited the partner institutions. Through international collaboration with the Universitas Negeri Jakarta, Politeknik Ibrahim Sultan gained valuable insights into implementing technopreneurship in education, particularly within the fashion sector. The program strengthened academic cooperation between the two institutions while opening opportunities for future collaborative activities in education, research, and community service.

Overall, this Community Service Program successfully achieved its established objectives: enhancing the knowledge and skills of Politeknik Ibrahim Sultan students in developing innovative, technology-driven, and market-oriented fashion business models that incorporate sustainable fashion principles. The Participatory Learning approach proved effective in creating an active, contextual, and practical learning process; consequently, students not only grasped theoretical concepts but also gained the ability to apply them in developing the Business Model Canvas and ReDesign Canvas as foundations for sustainable fashion business development.

The achievement of program output targets included improved proficiency in correctly and effectively constructing the Business Model Canvas (BMC) and ReDesign Canvas. The pre-test and post-test results from the community service activity are presented below (see Figure 2).

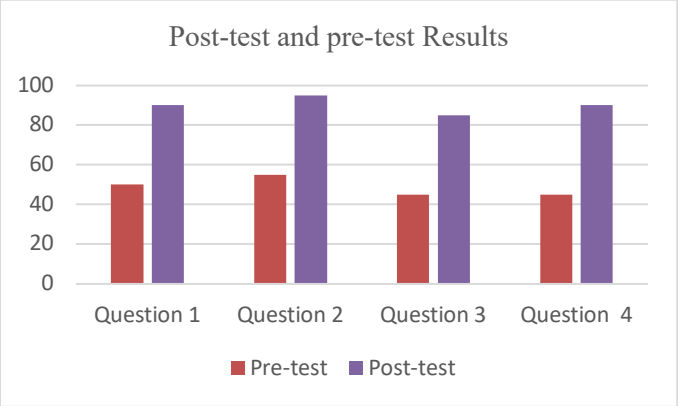


Figure 2. A presents a comparison between the pre-test and post-test results of 38 participants across four evaluation questions, June 2026

Figure 2 presents a comparison of pre-test and post-test results from 38 students regarding 10 initial questions, which were classified into four key evaluation questions based on Bloom's Taxonomy. Question 1 measured students' knowledge of the Business Model Canvas (BMC); Question 2 measured their understanding of how to construct and develop a BMC; Question 3 measured students ' knowledge of the ReDesign Canvas; and Question 4 measured their understanding of how to construct and apply the ReDesign Canvas as a business planning tool that integrates principles of innovation and sustainability.

The evaluation was conducted by comparing student responses before and after the training program. The pre-test was used to assess students ' initial knowledge and understanding, while the post-test was administered after the entire training series concluded to identify improvements in learning outcomes. The results were analyzed descriptively based on the percentage of students demonstrating knowledge and understanding of each of the four aspects.

Prior to the training, results indicated that students ' knowledge and understanding of both the BMC and the ReDesign Canvas were relatively limited. Specifically, 50% of students lacked knowledge regarding the BMC (Question 1), while 55% did not understand how to construct a BMC (Question 2).

Similarly, 45% of students lacked knowledge of the ReDesign Canvas (Question 3), and 45% did not understand how to apply it as a business planning tool integrating innovation and sustainability (Question 4). These findings indicated a need for foundational learning regarding business models, technopreneurship, and sustainable fashion.

Following the training, post-test results showed significant improvement across all four evaluation aspects. Specifically, 90% of students demonstrated knowledge and understanding of the BMC (Question 1), while 95% understood how to construct and develop a BMC (Question 2). Regarding the ReDesign Canvas, 85% of students demonstrated an understanding of its concepts and functions (Question 3), while 90% understood how to construct and apply the ReDesign Canvas for business planning focused on innovation and sustainability (Question 4). This evaluation framework is based on the revised Bloom's Taxonomy proposed by Anderson and Krathwohl (2001). Within this framework, test results primarily measure the "remembering" and "understanding" dimensions, whereas observations of students engagement and practical exercises involving the development of the BMC and ReDesign Canvas provide evidence regarding the "applying" and "creating" dimensions. Consequently, the evaluation does not rely solely on improvements in pre-test and post-test scores but also considers the students' ability to apply their knowledge in practical contexts.

Overall, the pre-test and post-test results indicate that the ReDesign Canvas training successfully enhanced students' competence in understanding and applying both the BMC and the ReDesign Canvas as instruments for designing more innovative business models. This gain in knowledge and skills serves as a foundation for students to develop fashion brands that integrate technopreneurship, creativity, and sustainability, thereby boosting business competitiveness in the digital economy (see figure 3, 4 dan 5).



Figure 3. Discussion on material delivery by lecturers from Universitas Negeri Jakarta and Politeknik Ibrahim Sultan, Malaysia (Source: Personal documentation, 2026)



Figure 4. Presentation of BMC and ReDesign Canvas materials to Politeknik Ibrahim Sultan, Malaysia (Source: Personal documentation, 2026)



Figure 5. Group photo of the implementation team and participants of the Community Service Program at Politeknik Ibrahim Sultan, Malaysia
(Source: Personal documentation, 2026)

Based on the results of the Community Service program, several positive outcomes were achieved. The Community program, which developed the BMC and ReDesign Canvas has contributed to strengthening students' entrepreneurial capacity and readiness, which may subsequently encourage their engagement in technopreneurial activities and the development of sustainable fashion business initiatives among students at the Politeknik Ibrahim Sultan. Although these results do not directly indicate the creation of new businesses or long-term entrepreneurial activities, the enhanced knowledge and understanding serve as a crucial foundation for entrepreneurial development. Research suggests that entrepreneurial knowledge can strengthen entrepreneurial intentions and skills, thereby supporting entrepreneurial behavior and activities (Liao *et al.,* 2022; Motta & Galina, 2023; Ngo *et al.,* 2024). In this program, the BMC and ReDesign Canvas provided a structured framework for students to integrate sustainability aspects into their fashion business models. These evaluation findings also serve as a crucial basis for refining the design and implementation of future community service programs and best interpreted as representing initial reinforcement and entrepreneurial readiness (Dwijayanti *et al.,* 2023). Consequently, this initiative can support the future development of technopreneurship activities for students at Politeknik Ibrahim Sultan. Future activities should focus on business prototype development and the implementation of sustainable fashion businesses to determine whether this increased knowledge and readiness truly translate into tangible entrepreneurial behavior.

4. Conclusions

A Community Service Program conducted through training on the Business Model Canvas (BMC) and ReDesign Canvas successfully enhanced the technopreneurship knowledge and skills of students at Politeknik Ibrahim Sultan, Malaysia. The program focused on developing innovative, technology-driven, and market-oriented fashion business models that incorporate sustainable fashion principles. A participatory learning approach fostered active student engagement through discussions, practical exercises, and mentoring, making the learning process highly applicable to the needs of the fashion industry. Pre-test and post-test results demonstrated improved understanding among students regarding entrepreneurship, technopreneurship, the Business Model Canvas, the ReDesign Canvas, and sustainability within the fashion business. These evaluation findings also serve as a crucial basis for refining the design and implementation of future community service programs. Beyond enhancing student competence, this initiative strengthened academic collaboration between Universitas Negeri Jakarta and Politeknik Ibrahim Sultan, supporting the development of globally competitive education and contributing to the achievement of the Sustainable Development Goals (SDGs), specifically SDGs 4, 8, 12, and 17.

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6. Conflict of Interest Declaration

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

7. Author Contribution Statement

All authors contributed equally to the conduct community service project, data analysis, and writing and preparation of this article.

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