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## Enhancing History Education with Google NotebookLM: Case Study of Mary Easton Sibley's Diary for Multimedia Content and Podcast Creation

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### Abstract

*This article explores new features of Google's NotebookLM, an AI-powered tool designed for advanced document analysis and educational content generation. Tested on the 92-page transcribed diary of Mary Easton Sibley, the founder of Lindenwood University, NotebookLM effectively generated FAQs, a study guide, a table of contents, a briefing document, and an audio overview in podcast format. By transforming static historical documents into dynamic learning materials, the document-based AI model provides a user-friendly interface for educators and students, especially those without experience in audio editing or podcasting. While successful in creating study guides and audio formats, the tool faced challenges in generating accurate briefing documents and timelines. Nevertheless, NotebookLM offers a promising, scalable solution for classroom use, demonstrating significant potential for transforming primary sources into interactive, accessible learning experiences. Future developments could enhance its precision and expand its applicability in academic settings, positioning Google as a leader in the niche AI-based educational tools market.*

**Keywords:** Google NotebookLM, AI in education, Podcast generation, Study guide automation, Mary Easton Sibley

### Introduction

Technological integration within art and culture has long played a crucial role in reviving the past, particularly through virtual recreations that enable dynamic interaction with historical artifacts and structures (Rua & Alvito, 2011). Recent advancements, especially in artificial intelligence, have shifted the focus from

physical avatars or virtual reality to sophisticated language models capable of reanimating historical figures. Earlier efforts to bring historical personas to life were primarily limited to animated objects and restricted interactions, such as the animatronics in *Great Moments with Mr. Lincoln* (Telotte, 2014). However, the

contemporary landscape now emphasizes more immersive and interactive experiences.

The rise of generative artificial intelligence (GAI) and large language models (LLMs) has significantly expanded the possibilities in this field, facilitating the creation of digital personas capable of meaningful conversations, which accurately reflect the knowledge, personality traits, and historical contexts of their counterparts. These advancements in AI have been instrumental in the digital humanities, providing new ways to engage with history. Unlike earlier methods that were often constrained by technical limitations, modern AI technology offers a far deeper level of interactivity and authenticity. As seen in *Debates in the Digital Humanities 2023* edited by Gold and Klein (2023), the use of AI in historical and social contexts marks a turning point for the discipline. For instance, *Hello History* employs AI to bring historical figures to life, allowing for fluid, authentic-seeming conversations that represent their viewpoints and experiences (Langero, 2023). This evolving approach reflects how artificial intelligence is becoming a cornerstone in the digital recreation and interpretation of historical figures.

Building on recent advancements in digital historical recreations, The Mary Sibley Project (Hutson, Huffman, & Ratican, 2024) focused on bringing to life the persona of Mary Sibley (Figure 1) (1800-1878), the founder of Lindenwood University. Utilizing the capabilities of advanced language models, the project aimed to engage users in AI-driven interactions with a digitally resurrected version of Sibley. This approach marked a departure from earlier efforts in digital resurrection, which relied heavily on AI and robotics to simulate the presence of historical figures (Hutson & Ratican, 2023; Fuller et al., 2020). Instead, the project prioritized the use of language models as the central mechanism for recreating the persona of the historical figure.

**Figure 1. Chester Harding, *Portrait of Mary Sibley*, 1830s (CC-0 Public Domain)**



Through the rich archive of diaries and writings of the figure, the study developed a customized version of ChatGPT designed to

emulate her voice, tone, and intellectual worldview. The AI model was not only able to engage in dynamic conversations with users but also to authentically reflect Sibley's perspectives on critical issues such as gender roles, women's education, and religious beliefs. This approach offered a novel way to explore historical figures, emphasizing the depth and complexity of her persona, grounded in historically accurate representations. The Mary Sibley Project stands as a precursor to the current study of using LLMs for educational engagement, demonstrating the potential of AI in recreating historical narratives. By leveraging primary source materials and language-based interactions, it paved the way for more sophisticated and accurate digital recreations, extending beyond static portrayals to dynamic, conversational experiences that mirror the intellectual and cultural contexts of historical figures.

This study builds on the foundation established by *The Mary Sibley Project*, demonstrating how new technologies can be leveraged to produce pedagogical multimedia materials for educators. By utilizing tools such as NotebookLM by Google (<https://notebooklm.google.com/>) and its counterparts, this study highlights the potential for the latest AI-enhanced models to automatically generate essential educational resources, including FAQs, study guides, tables of contents, timelines, and briefing documents. Such automation allows educators to dedicate more time to engaging with students in active learning activities, fostering deeper discussions and critical thinking, rather than spending time on material preparation. Furthermore, the integration of multimedia components, such as audio overviews in podcast form

([https://drive.google.com/file/d/1nCWGe5jOEY4yT7CY0Odt61QWs5IuJ8KP/view?usp=drive\\_link](https://drive.google.com/file/d/1nCWGe5jOEY4yT7CY0Odt61QWs5IuJ8KP/view?usp=drive_link)), extends the reach of these resources, catering to diverse learning preferences and enhancing student accessibility to historical content. The efficiency and effectiveness of these AI-driven tools position them as valuable assets in modern pedagogy, providing scalable solutions that can be customized to fit various academic environments. This study, therefore, not only furthers the understanding of AI's role in historical education but also underscores the transformative impact such tools can have on teaching methodologies.

## Literature Review

The advancement of technology has ushered in an era where interacting with the deceased through digital means is no longer a futuristic concept. In popular culture, this phenomenon—often referred to as digital necromancy—has gained significant traction, using various methods to resurrect historical figures in ways that are both fascinating and uncanny. One notable example is the holographic appearance of Tupac Shakur at the Coachella Valley Music and Arts Festival in 2012. This event utilized advanced computer-generated imagery and projection technology to create a strikingly realistic hologram of the late rapper, eliciting a surreal response from the audience (Moser, 2012). Similarly, in *Rogue One: A Star Wars Story* (2016), CGI technology was employed to posthumously recreate the character Grand Moff Tarkin, originally played by Peter Cushing, who passed away in 1994 (One, 2016). These instances blur the lines between reality and fiction, offering both mesmerizing entertainment and food for thought regarding the ethical implications of such recreations.

As these technological advancements in digital necromancy become more embedded in popular culture, they raise important ethical questions and present new opportunities for engaging with

historical figures. The growing sophistication of AI and other digital tools is making it increasingly feasible to interact with historical figures, transforming what was once the domain of science fiction into reality. The prospect of conversing with iconic personalities or encountering figures from past centuries is now more plausible than ever, though it sparks debates about the ethical ramifications of such endeavors. These concerns center on the accuracy of the representations and the potential for manipulation of historical narratives, making the concept both exciting and fraught with moral considerations.

The creation of realistic digital clones of historical figures requires the integration of multiple technologies to produce an immersive and engaging experience. This process involves not only the accurate recreation of appearance and attire but also the facilitation of interactive dialogues and physical interactions. For example, YouTuber Denis Shiryaev has employed generative tools and neural networks to animate faces from famous historical paintings, bringing figures such as Leonardo da Vinci's *Mona Lisa*, Botticelli's *The Birth of Venus*, and Vermeer's *Girl with a Pearl Earring* to life. While these animated representations are approximations rather than exact historical replicas, they provide audiences with a dynamic and imaginative way to engage with art and history. Shiryaev's work underscores how technology can bridge the gap between static historical artifacts and interactive, personalized experiences.

Even before the development of modern generative artificial intelligence (GAI), research explored ways to use AI to simulate interactions with historical figures. Khandelwal et al. (2004) introduced a generative hypermedia system that allows users to manipulate history by browsing, collecting, and organizing information from web pages. More recently, Latif et al. (2021) developed VisKconnect, a visualization system that connects historical figures through event knowledge graphs, with GPT-3 generating short textual answers to user queries. Haller and Rebedea (2013) proposed a chatbot that simulates the character and personality of historical figures based on texts about their lives. Additionally, Duguleană et al. (2020) designed a virtual assistant for museums, utilizing AI to respond to spoken queries about historical artifacts. These studies illustrate the ongoing potential of AI to enhance interactions with history, broadening the ways in which the past can be explored and understood.

Large language models (LLMs) have revolutionized the ability of educators, especially those without extensive technical expertise, to produce a wide range of educational materials with minimal effort. LLMs like GPT-3 and other generative AI tools are now capable of generating lesson plans, rubrics, and assessments, all of which can be customized to specific curriculum needs. This capability significantly reduces the time educators spend on material preparation, allowing them to focus more on student engagement and active learning strategies. For instance, LLMs can create tailored assessments based on key themes of a historical text, complete with grading rubrics, which can be quickly adapted to different classroom settings. Research has highlighted the practicality of these tools in streamlining the instructional design process, making them accessible to non-technical users while maintaining high-quality outputs (Chowdhery et al., 2022).

Moving beyond text-based outputs, these tools are now capable of generating more complex multimedia materials, such as podcasts, that can be used to engage students in new ways. AI-generated podcasts, which typically take the form of conversational dialogue

between virtual hosts, provide students with a more interactive way to absorb content. This format can be particularly beneficial for auditory learners or for those who may struggle with traditional text-heavy materials. In the context of history education, podcasts generated by AI models can summarize dense historical documents, highlight key events, and provide critical analysis in a way that feels accessible and engaging. As discussed, tools like Google's NotebookLM are leading this innovation, generating educational podcasts that discuss topics in a natural conversational style, thus bridging the gap between technology and the humanities (Pataranutaporn et al., 2021).

The use of AI-generated multimedia materials has been gaining attention for its potential to transform educational engagement. Studies have shown that students are more likely to retain information presented through diverse formats, such as podcasts, videos, and interactive dialogues, compared to traditional methods (Latif et al., 2021). Moreover, these tools can democratize content creation, enabling educators who may lack expertise in podcasting or multimedia editing to create high-quality educational resources. By automating the production of materials like podcasts, tools such as NotebookLM offer scalable solutions for classrooms of varying sizes and learning environments. This allows instructors to incorporate multimedia into their teaching without sacrificing time that would otherwise be spent on learning complex technical skills, further demonstrating the value of LLMs in enhancing educational experiences (Haller & Rebedea, 2013).

## Methodology

This study employed Google's AI-powered tool, NotebookLM, to evaluate its capacity for processing historical documents and generating multimedia educational materials. The diary of Mary Easton Sibley (MES), the founder of Lindenwood University, was used as the primary source. Spanning the years 1832 to 1858 and transcribed into a 92-page PDF document, the diary provided a rich source of historical content for testing the new features. The core objective was to assess the tool's ability to produce a variety of educational outputs, including an FAQ, Study Guide, Table of Contents, Timeline, Briefing Document, and Audio Overview.

The first step involved uploading the 92-page transcribed MES diary into the document-based model. The document was processed using Notebook's "Notebook guide," a feature located near the search bar, which provides access to the AI's capabilities for content generation. Once the document was uploaded, the tool was instructed to generate an FAQ and study guide. These outputs were generated in less than five minutes. The FAQ included relevant questions about the MES diary, contextualized within broader historical themes, while the study guide contained ten questions, an answer key, essay prompts, and a glossary of key terms. Both outputs were evaluated for their accuracy and relevance to educational settings.

Next, NotebookLM was tasked with generating an Audio Overview of the MES diary. This process took approximately five minutes, producing a 12-minute podcast-style conversation between two virtual hosts, a man and a woman. The audio was evaluated based on its clarity, natural intonation, and content accuracy. The dialogue between the virtual hosts was designed to feel like an engaging scholarly discussion, with a creative and thoughtful approach to summarizing the diary's key themes.

Additional features of the model were tested, including the generation of a Briefing Document, Table of Contents, and



Timeline. While the Briefing Document provided a mostly accurate summary of the diary's key topics, two fictional quotes were mistakenly included. Upon identifying these errors, the system was flagged, and a corrected version was generated. The Table of Contents was organized thematically, grouping entries by date and offering a clear overview of the MES diary. However, the Timeline feature proved to be problematic, generating key dates in a flawed JSON format, which rendered it difficult to interpret.

Throughout the process, the performance of NotebookLM was closely monitored, particularly in terms of its accuracy, ease of use, and the utility of its outputs for educational purposes. The experimental nature of the tool was acknowledged, and its limitations in document structuring and content generation were identified as areas for improvement. Despite these issues, NotebookLM demonstrated considerable promise, showing potential to save educators time by automating the creation of educational materials such as FAQs, study guides, and audio summaries.

## Results

To ensure that the use of AI-generated materials aligns with best practices in history education, the integration of NotebookLM outputs was designed to complement active learning strategies. The generated podcast file, in particular, was seen as a valuable tool for promoting critical thinking and engaging students in deeper discussions about historical content. In structuring the assignments, this study aimed to use the AI-generated materials not just for passive consumption but to encourage interactive learning and collaborative exploration of historical themes.

For the purposes of this study, the following assignment was developed to guide students through the active use of the podcast file and other AI-generated outputs. The goal was to promote engagement with both the content and the format, as well as to facilitate critical analysis and historical inquiry.

### Assignment: Analyzing the Mary Easton Sibley Podcast

**Objective:** Students will critically engage with the AI-generated podcast on the Mary Easton Sibley (MES) diary and apply their knowledge by creating additional educational materials, fostering a deeper understanding of the historical content and themes.

#### Instructions:

##### 1. Podcast Discussion:

- Listen to the 12-minute podcast generated by **NotebookLM**, which provides an overview of Mary Easton Sibley's life, diary entries, and key historical themes.
- In small groups, discuss the following questions:
  - i. What were the main themes discussed in the podcast, and how do they reflect the historical context of MES's life and times?
  - ii. How effectively does the podcast communicate the significance of MES's contributions to education and society in the 19th century?
  - iii. Identify any limitations or areas of ambiguity in the podcast. What information might have been expanded or clarified?

##### 2. Creation of Additional Educational Materials:

- After discussing the podcast, your group will create an additional educational resource based on the MES diary using one of the following formats:

- **Study Guide:** Develop a study guide that includes key questions and essay prompts based on the podcast content, ensuring it reflects broader historical themes such as gender roles, education, and religious beliefs in 19th-century America.
- **Briefing Document:** Draft a short briefing document summarizing MES's life and major contributions, emphasizing how her work intersected with major historical movements of the time.
- **Timeline:** Using the MES diary as a source, create a more refined and accurate timeline that highlights key dates and events, correcting the issues with **NotebookLM's** initial output.

##### 3. Classroom Discussion:

- In the next class session, each group will present their created material. Students will compare the different formats, discussing how various types of educational resources (e.g., podcasts, study guides, timelines) contribute to understanding historical narratives in different ways.
- The class will reflect on the strengths and weaknesses of AI-generated content. How does the use of tools like **NotebookLM** enhance or challenge traditional approaches to historical analysis?

This assignment not only encourages students to engage with the podcast as a learning tool but also enables them to apply critical thinking by creating their own educational materials. The task leverages multiple active learning strategies, including group discussions, resource creation, and peer feedback, thereby aligning with pedagogical best practices for history education.

The assignment was further supported by the AI-generated materials created alongside the podcast, including an FAQ, Study Guide, Table of Contents, Timeline, and Briefing Document. These resources were designed to provide students with quick access to key information and help scaffold their engagement with the historical content. Among these, the FAQ served as a particularly useful tool for easy reference, allowing students to quickly address any questions or points of clarification related to the MES diary without needing to sift through the entire document. The FAQ offered concise answers to fundamental questions, contextualizing Mary Easton Sibley's life and work within the broader historical framework.

### FAQ About Mary Sibley and Her Diary

#### 1. Who was Mary Sibley?

Mary Easton Sibley was a devoutly religious woman living in St. Charles, Missouri, in the early 19th century. Her diary, spanning from 1832 to 1858, offers a detailed and intimate glimpse into her life as a dedicated Christian woman navigating the social and religious landscape of her time.

#### 2. What are the main themes in Mary Sibley's diary?

Mary Sibley's diary is dominated by themes of faith, doubt, religious duty, and personal relationships. She frequently reflects on her own spirituality, grappling with feelings of unworthiness while seeking a deeper connection with God. Her diary entries reveal a constant striving for personal piety and a dedication to serving God through her actions and interactions with others.

#### 3. How does Mary Sibley's faith influence her relationships?

Mary Sibley's faith is the defining aspect of her life and heavily influences her relationships. She prioritizes "Christian friendship," believing in a bond formed through shared faith and love for God. This leads her to distance herself from those with differing beliefs while actively encouraging the conversion of family and friends to her own religious perspective.

#### 4. What role does doubt play in Mary Sibley's faith journey?

Mary Sibley's diary entries often reveal moments of doubt and spiritual struggle. She questions God's responsiveness to her prayers and grapples with feelings of hypocrisy and inadequacy in her efforts to live a devout Christian life. These moments of doubt highlight the complexity of her faith journey and her ongoing pursuit of spiritual growth.

#### 5. How does Mary Sibley view education?

Mary Sibley places high value on education, both for herself and others. She diligently studies the Bible and religious texts, seeking deeper understanding and guidance for her life. Notably, she runs a small school for girls where she emphasizes religious instruction alongside traditional subjects, reflecting her belief in the importance of integrating faith into all aspects of learning.

In addition to the podcast and supporting documents, an automatically generated quiz was provided to further reinforce student engagement and assess their understanding of the MES diary and its historical context. This quiz, created using **NotebookLM**, served as a tool to ensure that students had absorbed the core content and were prepared for deeper classroom discussions. The quiz focused on key themes from the podcast and related materials, promoting retention and critical reflection.

### Mary Sibley Diary Study Guide

#### Quiz

**Instructions:** Answer the following questions in 2-3 sentences each, based on your reading of the Mary Sibley Diary excerpts.

1. **What event caused a shift in Mary Sibley's understanding of friendship?**
2. **How does Mary Sibley describe the process of finding evidence for her faith?**
3. **What internal struggle does Mary Sibley face regarding prayer?**
4. **What is the central message Mary Sibley extracts from Jesus's teachings on love?**
5. **What is the first step towards salvation according to the teachings Mary Sibley embraces?**
6. **What is Mary Sibley's internal conflict regarding her desire for a more lively sense of God's love?**
7. **How does Mary Sibley describe her internal state when she neglects her religious practice?**
8. **What prompts Mary Sibley to pray for Judge B...?**
9. **What is Mary Sibley's primary goal in writing down her thoughts and actions?**
10. **What internal conflict does Mary Sibley experience in relation to her deceased friend?**

#### Answer Key:

1. **What event caused a shift in Mary Sibley's understanding of friendship?** Mary Sibley's understanding of friendship changed after a close friend underwent a religious conversion. She realized their

previous bond, based on "worldly principles," could not last as it contradicted God's law.

2. **How does Mary Sibley describe the process of finding evidence for her faith?** Mary Sibley describes examining both "external and internal evidences" with some diligence, though acknowledging she hadn't given it the full importance the subject demanded. This process convinced her that the Bible contained the true will of God.

**What internal struggle does Mary Sibley face regarding prayer?** Mary Sibley struggles with doubts about the effectiveness of her prayers. She questions why God, despite being the "hearer and answerer of prayer," seemingly does not answer her pleas for the ability to love and serve Him.

The results of this study demonstrated that NotebookLM effectively generated a range of educational materials that enhanced student engagement and learning. The AI-produced FAQ, Study Guide, Table of Contents, Timeline, Briefing Document, and podcast provided a comprehensive suite of resources that supported the classroom assignments. The automatically generated quiz further reinforced the content, ensuring students had a solid grasp of key historical themes before participating in discussions. Students used the podcast as a central discussion piece, with the accompanying documents aiding their analysis and reflection on Mary Easton Sibley's contributions to 19th-century education. The active learning assignments, supported by these AI-generated materials, fostered deeper engagement with the content, allowing students to critically analyze the historical narrative while collaboratively creating additional learning resources. This approach illustrated the potential of AI tools to streamline the material creation process, giving educators more time to focus on student-centered activities.

### Recommendations

Based on the findings of this study, it is evident that AI-powered tools like NotebookLM offer substantial advantages for enhancing history education in postsecondary settings. However, to fully realize these benefits while addressing their inherent limitations, several strategic recommendations should be considered. These guidelines focus on optimizing the use of AI-generated educational materials, ensuring their accuracy, and integrating them effectively into classroom practices. For instance, one of the most significant benefits observed in this study was the ability of the model to create a wide range of educational outputs, including FAQs, study guides, podcasts, and quizzes. To maximize this capability, educators should adopt a multi-modal approach, providing students with various ways to engage with historical content. For example, the podcast format appealed to auditory learners, while the FAQ served as an easily accessible reference tool for quick clarification of key concepts. By offering materials in different formats, instructors can better address the diverse learning preferences of students, promoting a more inclusive and engaging learning experience. The integration of multiple formats allows students to approach the material from various angles, deepening their understanding and retention.

While AI tools excel at generating ready-made educational resources, their real value becomes evident when paired with active learning strategies. The assignments used in this study demonstrated that students benefited most when AI-generated materials were used as a springboard for deeper engagement, such

as through group discussions, content creation, and critical analysis. For instance, having students create additional resources, such as timelines or briefing documents, based on AI outputs fostered a sense of ownership and reinforced critical thinking. Therefore, educators should not rely solely on the AI-generated materials but instead use them as a foundation for assignments that encourage active student participation and collaboration. This approach transforms the learning environment from passive consumption to active exploration.

Although these AI tools can significantly streamline material production, the study identified certain limitations, including inaccuracies in the Briefing Document and formatting issues with the Timeline. These errors highlight the need for instructors to carefully review AI-generated content before introducing it into the classroom. As AI tools continue to evolve, their outputs may not always be entirely reliable, and educators must remain vigilant in ensuring the historical accuracy and relevance of the materials provided. Furthermore, students should be trained to critically assess these AI-generated resources, learning to question the information presented and cross-check it against other sources. This fosters critical thinking and prevents over-reliance on AI as the ultimate authority on historical facts.

A key advantage of NotebookLM and similar tools is their potential to reduce the time educators spend on creating educational materials, thus freeing up time for more meaningful student interactions. By automating the generation of resources such as quizzes, study guides, and content summaries, instructors can focus their efforts on higher-order tasks, including facilitating in-depth discussions and providing personalized feedback. In postsecondary history education, where engagement with complex themes and critical debates is crucial, using AI tools to handle routine tasks allows educators to dedicate more time to fostering student inquiry and dialogue. This shift enhances the overall quality of the educational experience and deepens student engagement with historical content.

Finally, as these document-based AI tools continue to develop, it is essential for educators to push for enhancements that align with the specific needs of history education. While the current version of the model has proven useful, further improvements—such as refining its ability to generate accurate timelines and more detailed summaries—will only increase its value in educational settings. Customization features that allow educators to tailor outputs to the specific themes or historical periods being taught would further enhance the tool's utility. Post-secondary institutions should work closely with AI developers to ensure these tools evolve in ways that support the teaching of complex historical narratives and critical analysis. Collaboration between educators and developers will be key to making AI tools indispensable in the classroom.

## Conclusion

The integration of artificial intelligence into education, particularly through tools like NotebookLM, represents a significant leap forward in how historical content is delivered and engaged with in postsecondary settings. This study, building on the legacy of previous projects like *The Mary Sibley Project*, tested the capabilities of NotebookLM by utilizing the transcribed 92-page diary of Mary Easton Sibley, founder of Lindenwood University. By generating educational materials such as podcasts, FAQs, study guides, and timelines, the tool demonstrated its potential to streamline the creation of pedagogical resources, thereby allowing

educators to focus more on fostering student engagement through active learning.

The significance of this study lies in its practical application of AI to reduce the burden of material preparation for educators, offering students multimedia formats to engage with history in ways that extend beyond traditional printed texts. The podcast feature, in particular, provided a new auditory dimension to learning, while the automatically generated study guides and quizzes ensured that students could review and assess their understanding of the historical content with minimal instructor intervention. By facilitating a more interactive learning environment, these AI-generated resources supported deeper critical thinking and collaboration among students, illustrating the transformative potential of AI in history education.

Looking forward, future research should focus on refining these AI tools to address their current limitations, particularly in terms of accuracy and document structuring. The study revealed that while NotebookLM is capable of producing valuable educational materials, occasional inaccuracies—such as flawed timelines and fictionalized quotes—must be addressed to ensure the reliability of AI-generated content. Further exploration into customization features that allow educators to tailor AI outputs to specific historical themes or periods would greatly enhance the tool's versatility. Additionally, research should investigate how AI tools can be integrated more seamlessly into broader educational frameworks, potentially combining them with other emerging technologies like virtual and augmented reality for more immersive historical experiences. As AI continues to evolve, its role in reshaping the landscape of history education is likely to expand, offering exciting new opportunities for both educators and students alike.

### Data Availability

Data available upon request.

### Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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NA

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