

Leveraging AI for Laboratory Administration & Management



The ongoing shortage of trained laboratory personnel highlights the need to optimize efficiency using all available tools. Large language models (LLMs)—such as ChatGPT, Google Gemini, Microsoft Copilot, and NotebookLM—offer AI-powered solutions to support laboratory professionals in administrative and management tasks that can otherwise often be time-consuming.

While LLMs cannot replace human experience, intuition, or personality, they can enhance creativity, efficiency, and workflow. This job aid outlines practical use cases based on feedback from laboratory leaders in pathology and laboratory medicine.

Best Practices for Using LLMs in Laboratory Management and Administration

1. **Practice & Explore** – The more you use LLMs, the better you get at leveraging their capabilities. Try them out!
2. **Data Security First** – Never include personal health information (PHI) in your prompts.
3. **Institutional Guidelines** – Verify whether your organization has specific policies regarding LLM use.
4. **Think of AI as a Virtual Assistant** – Interact with LLMs conversationally, as you would with an Executive Assistant or Chief of Staff.
Example: “Can you explain ‘Direct to Consumer’ testing, including NY state laws?”
5. **Verify Accuracy** – Always double-check AI-generated responses. Question anything that seems incorrect.
6. **Proofread & Refine** – Review all AI-generated content to ensure accuracy and clarity. Provide feedback to improve output.
7. **AI Should Assist, Not Speak for You** – AI-generated text should support your work but not replace your voice or authenticity.
Example: One SME noticed an employee’s AI-crafted self-evaluation felt unnatural and misrepresented their true writing style.
8. **Use AI to Fill Knowledge Gaps** – AI can help refine ideas and prevent oversight, making workflows more thorough and efficient. By strategically integrating LLMs, laboratory professionals can ease administrative burdens while maintaining the integrity and expertise essential to the field.

Table 1. AI Applications in Lab Management & Administration

Objective of Task	Any preferred AI program?	Commands (Examples)	Source Materials to Submit	Considerations
Preparing a draft of a job description	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Describe the position and responsibilities and ask ChatGPT to draft a job description	Attach a company job description that is close to or the right format	“Converse” with ChatGPT. Ask it to refine your results, change parts, be more concise, etc.
Writing introductions to presenting speakers	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Ask it to draft a short, medium, long introduction	CV/Resume	Ask ChatGPT to be casual, academic, add humor, etc.
Writing templates for letters of recommendation	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Ask for a letter of recommendation template		You can describe to the LLM something about the individual, and it will help craft the letter. For example, “I have worked with XXX in the XXX department for 20 years. They have done XYZ and contributed to XYZ.”
Summarizing long emails or email chains	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Cut and paste the entire email chain and ask for a summary	Email content/email chain content	“Always read the chain or have an understanding of the contents, if you have questions about the output...verify. You could also use NotebookLM and attached emails as sources. If you have other documents, websites or emails, NotebookLM can search everything and give you more information”
Preparing meeting minutes & follow-up actions	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Ask “Summarize meeting and list action items and owners”	Meeting transcript	You can do this using Chat GPT or another LLM. Always read and verify accuracy.
Proposing different business models	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Type to the LLM as if you were speaking to a colleague	If using NotebookLM, you can add websites and reports as sources	Be conversational, tell the LLM your idea, and it will help guide you through thought processes.
Considering how to communicate what you are trying to convey	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Type in what you are trying to say in your own words and let LLM finesse it for you the way you want		For example: Make this email “softer,” “assertive, yet friendly” or other tones.
Making email drafts more concise	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	“Make this email more concise”	Email content	
Developing or refining key talking points	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Cut and paste the text and ask for more detail on a specific area		
Improving efficiency in resolving questions about or finding references in contracts	NotebookLM	Save each contract as a notebook source and simply ask it questions	Contract	NotebookLM will search PDFs, websites, presentations, etc, and reference them in their response.
Preparing agendas for meetings	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Cut and paste an agenda and ask the LLM to add or remove certain items to either update or create a new agenda	Past agenda	Always proofread!
Preparing write-up summaries for annual evaluations of faculty	Most LLMs like ChatGPT, Gemini, Microsoft Copilot	Cut and paste any previous evaluations	CV/Resume with Annual Achievements	