

# Jordyn Knock

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## EDUCATION

### University of British Columbia

*Bachelor of Applied Science in Chemical and Biological Engineering, Co-op*

Vancouver, BC

*Sept. 2023 – April 2028*

## TECHNICAL SKILLS

**Bioprocess & Lab Skills:** Aseptic Technique, Fermentation Monitoring (Batch & Fed-Batch), Bioreactor Operation, pH and DO Control, Buffer Preparation, Biochemical Assays, Lab Safety & Documentation

**Process Engineering:** Process Optimization, Process Flow Diagrams (PFDs), Process Safety, Material & Energy Balances, Heat Transfer & Fluid Mechanics

**Data Analysis & Visualization:** Microsoft Office, Pandas, NumPy, Matplotlib, Excel charts

**Computational Tools & Programming:** Python, MATLAB, G-Code, C, Git, GitHub, LaTeX, Quality Management Systems (QMS)

**Testing & Failure Analysis:** Root Cause Analysis, Failure Analysis, Non-Destructive Testing (X-ray, Cross-Sectioning), Risk Assessment, Equipment Calibration

**Mechanical Design & Prototyping:** CAD (SolidWorks, Fusion 360), 3D Modeling, Rapid Prototyping, Engineering Drawings, Product Design Optimization

## EXPERIENCE

### BioProcess Technician Co-op

*LuxBio*

May 2025 – Present

*Vancouver, BC*

- Improved yield from 1 g/L to 3 g/L by implementing DO-stat fed-batch fermentation and developing automated control code to operate the process.
- Contributed to pilot-scale production efforts, including fed-batch fermentation and downstream processing, supporting pilot projects from development to optimization.
- Conducted filtration and purification experiments to enhance product quality, increasing enzyme activity from 5% to 24% without using IMAC purification.

### Research and Development Co-op

*Stryker*

May 2024 – August 2024

*Toronto, ON*

- Led an investigation into Wand Error 100, a critical product issue affecting 9% of in-field units; performed destructive and non-destructive testing to diagnose sensor malfunctions, identified the underlying problem, and proposed a solution to improve reliability.
- Created a robot to improve product accuracy using Python for control software, and modelled and 3D printed components for optimized assembly.

### Engineering Intern

*MOLLI Surgical*

July 2023 – August 2023

*Toronto, ON*

- Conducted Adhesive Tests, writing detailed test protocols and reports.
- Reverse engineered a Seal Tester and developed a large-scale Burn-In test, sourcing electrical components and creating a PCB prototype for testing.

## RELEVANT PROJECTS

### Hydrocortisone Production Proposal

Jan. 2025 – Apr. 2025

- Made a detailed plan on how to engineer *Saccharomyces cerevisiae* yeast to express mammalian genes CYP17A1 and CYP21A1, establishing a biosynthetic pathway from glucose to hydrocortisone in a continuous stirred-tank reactor (CSTR) under controlled conditions (25 °C, pH 6.5, limited light).
- Designed and implemented downstream purification workflow including hydrocyclone separation, thermal precipitation, high-performance liquid chromatography (HPLC) and dual-stage crystallization to yield a white powder product at over 98% purity meeting USP standards.

### Wand Error 100 Investigation

May 2024 – Aug. 2024

- Led a root cause investigation for the Wand Error 100, a defect affecting 9% of released wands, using non-destructive testing (X-ray, cross-sectioning, electrical testing) to identify failure points and propose solutions.
- Proposed and tested sensor encapsulation strategies to protect components from mechanical stress and adhesive interactions, leading to enhanced product reliability.