



**WPI**

# New Product Development for a Bipolar Energy System

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**MAXIMA**

# Sponsor - Maxima Biotech Inc.

## About The Company

- Designs and markets surgical equipment
- Focuses on Minimally Invasive Surgery (MIS)
- Specializes in cost-effectiveness



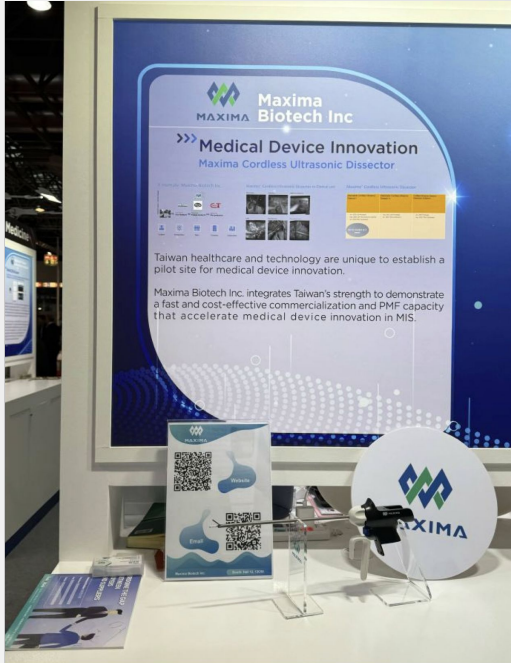
**HONG YI-PING**  
Maxima Biotech Inc.'s Chairman



**TANG XIAO-WEI**  
Maxima Biotech Inc.'s General Manager

[Maxima Biotech Inc. 2021](#)

# Maxima Biotech's Products



Maxima's Ultrasonic Dissector Showcased at the Taiwan Smart Healthcare Pavilion

[Hsiao-Wei Tang, 2024](#)



Maxima's Disposable Cordless Ultrasonic Dissector

[Healthcare+ Expo Taiwan, 2022](#)

# Open Surgery

## Complications

- One in twenty-five (4%) post-op mortality rate
- Large 3-4 inch incisions
- High chance of infection
- Greater pain and recovery times

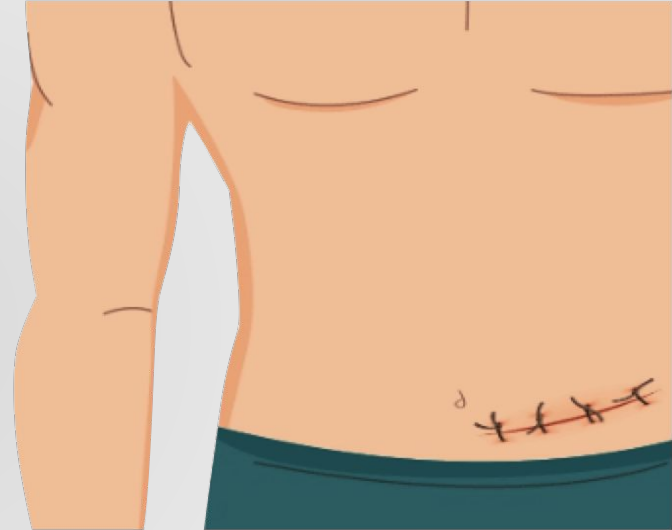


Diagram Visualizing Open Surgery Procedure

[Dr. Subhash Hakoo, 2024](#)

# Minimally Invasive Surgery (MIS)

## Advantages of MIS over Open Surgery

- Smaller ( $\frac{1}{2}$  inch or less) incisions
- Faster recovery time
- Lower infection risk
- Lower mortality rate

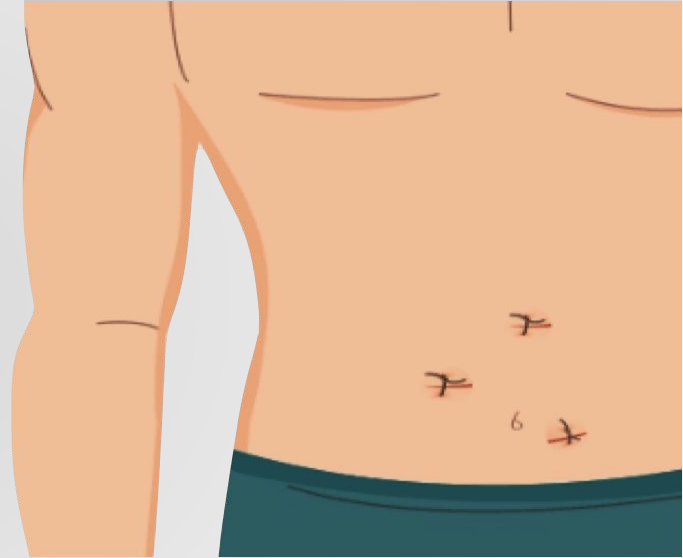


Diagram Visualizing MIS Procedure

[Dr. Subhash Hakoo, 2024](#)

# Types of Surgical Energies

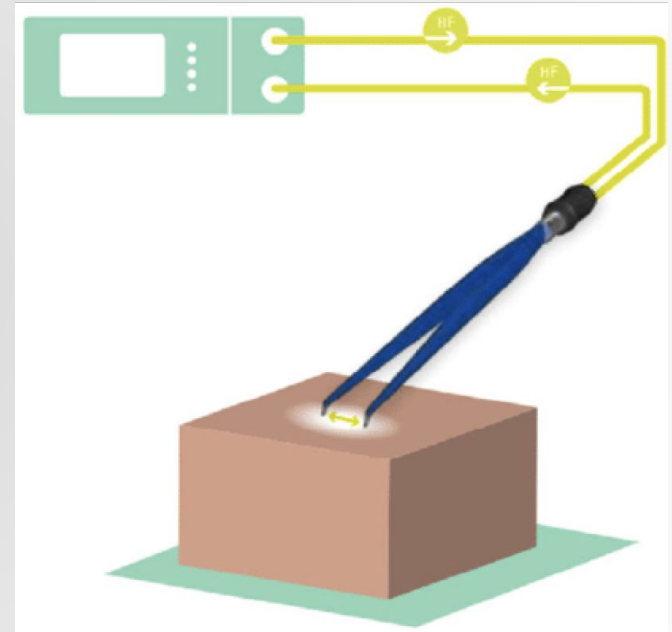
## Laparoscopic Surgical Energy Sources

### Electrical Energy

- Concept
- Uses
- Surgical Types

### Bipolar Energy Devices:

- Non-modulated, low-voltage current waveform
- Current passes through two electrodes

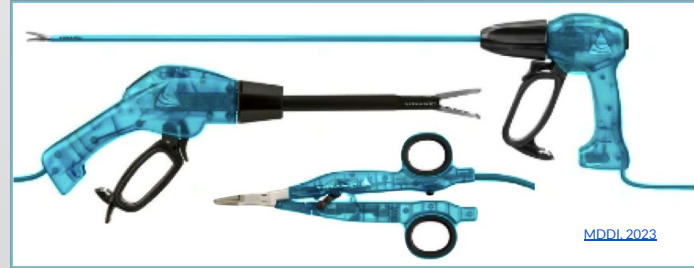


[Erbe Elektromedizin GmbH, 2020](#)

# Bipolar Energy Devices

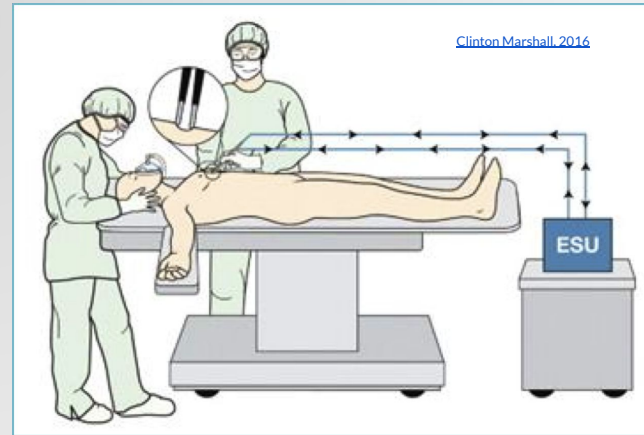
## Advantages

- Enhances surgical efficiency and safety
- Minimizes operation time
- Stops vessel bleeding
- Available in many forms



## Disadvantages

- Ineffective on smaller blood vessels
- Produces smoke
- Thermal damage depends on user's skill



# Market Analysis of Bipolar Devices



Demand for  
Bipolar Energy



[Verwell Health, 2023](#)

International  
Patents

Competitive  
Landscape



[Olympus Corporation of the Americas | LinkedIn, 2024](#)



[LIGASURE | LinkedIn, 2024](#)





# Project Goals and Objectives

## Goal

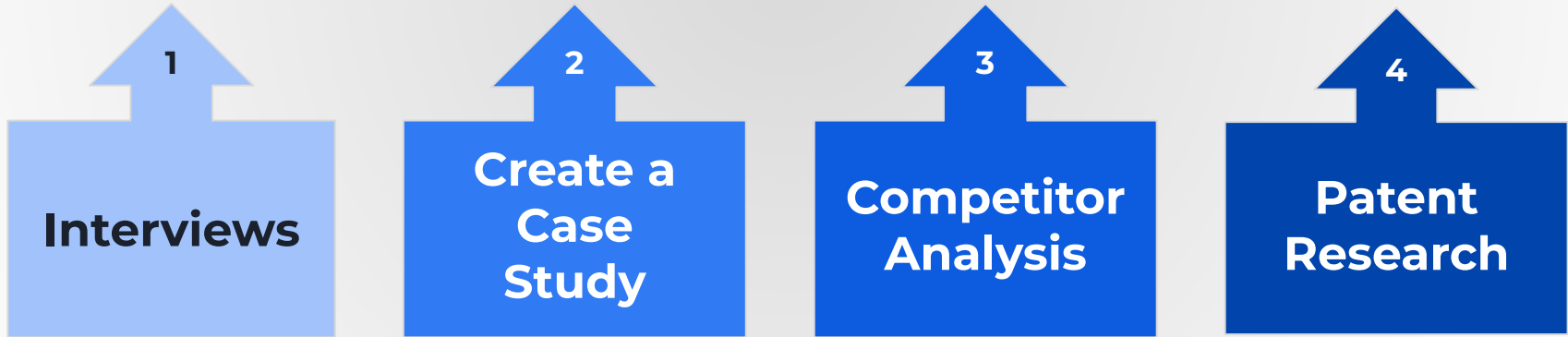
- Collaborate with Maxima Biotech Inc. to aid the development of their upcoming surgical bipolar energy system product.

## Objectives

- **Provide recommendations** *for product requirements*
- **Assess market need** *for a cost-effective product*
- **Identify key factors influencing adoption** *of new bipolar devices by surgeons*

# Methodology

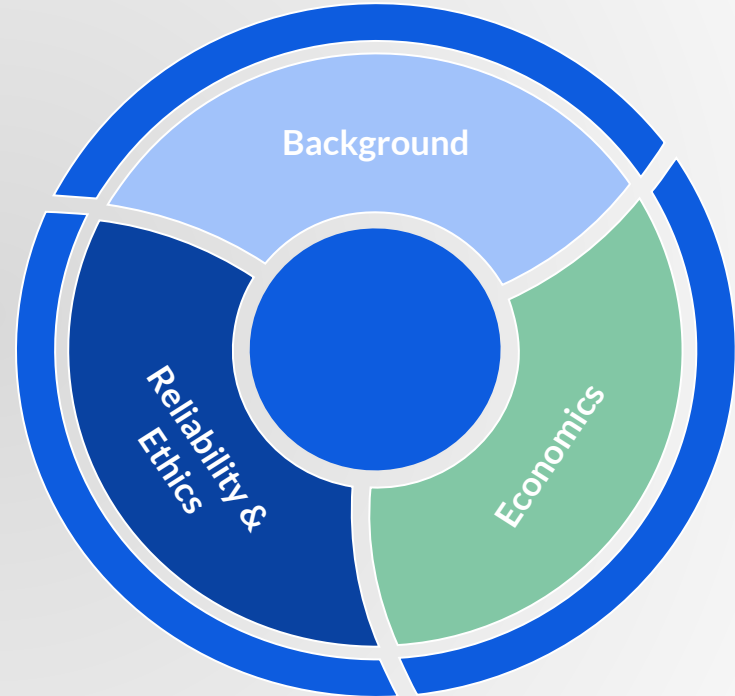
Provide recommendations for product requirements and marketing strategies for Maxima's upcoming bipolar device.



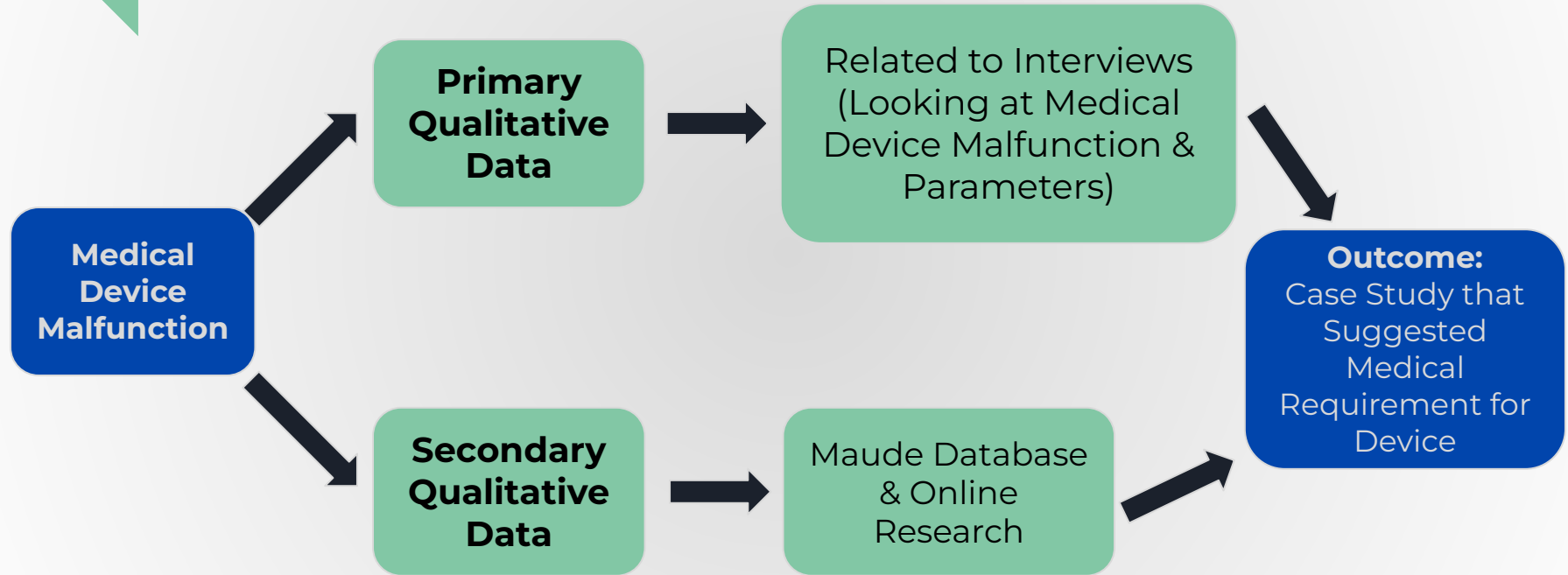
# Interviews

## Method Goal

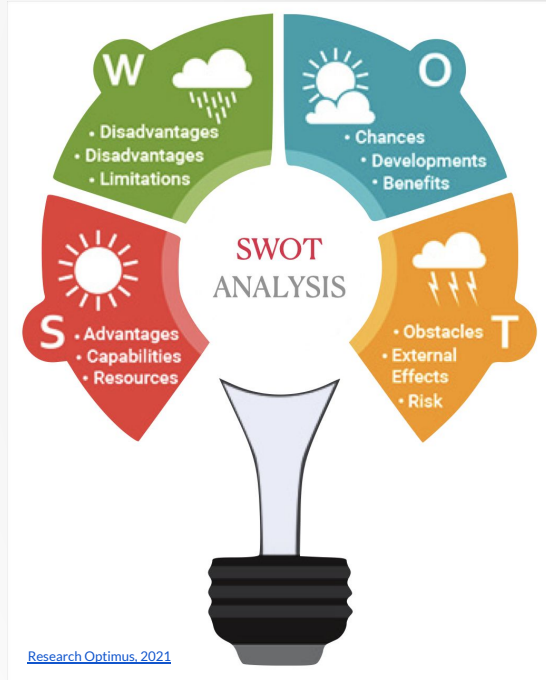
- Gain better understanding of minimally invasive surgical devices via their primary users



# Creating a Case Study

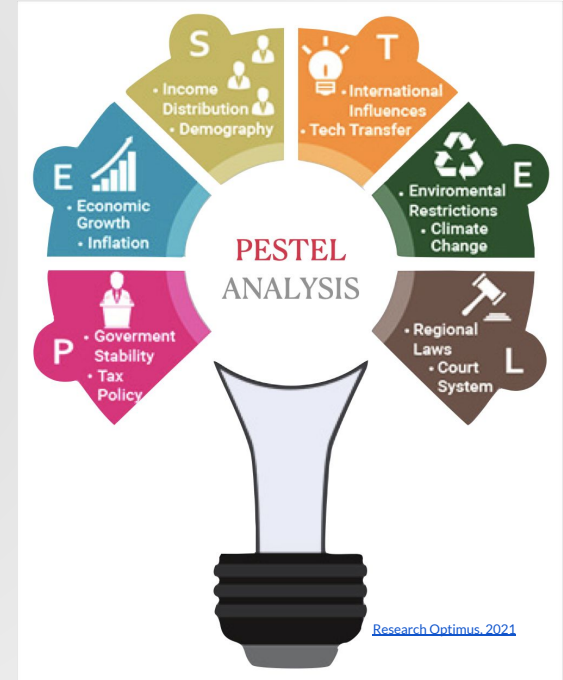


# Competitor Analysis

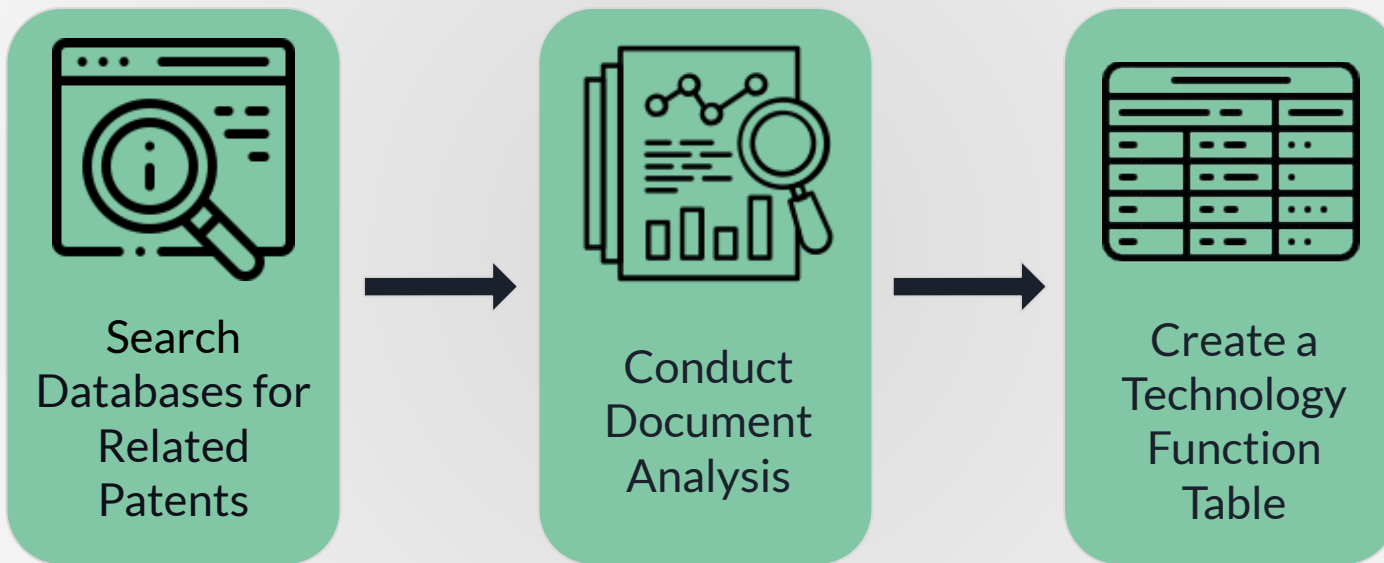


**Medtronic**  
[Medtronic, n.d.](#)

**OLYMPUS®**  
[Olympus, 2024](#)



# Patent Research



[Flaticon, 2024](#)

# THANK YOU!

Do you have any questions?

*Scan Here*



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## A Special Thanks to...

Our Project Sponsor, Maxima Biotech and Liaison, Dr. Tang Xiao-Wei

Our ID 2050 Advisor, Professor Amanda Wittman

Our IQP Advisors, Professor Robert Kinicki and Professor Wen-Hua Du



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