

Board for Glaucoma Research (PDS)

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Function: Galen Heyne, the client, has requested a device to allow a monkey board to adjust in the XY plane (move in X direction, move in Y direction, and be able to rotate at a minimum of 90 degrees) in order to make his research on glaucoma more efficient.

Client requirements:

- Must be able to move in the X direction (rough and fine adjustments)
- Must be able to move in the Y direction
- Rotate at least 90 degrees
- All rotations must be mechanical (no electronics for Animal safety)
- Has to be easily cleaned
- Preferably have a pad to keep monkeys warm

Design requirements:

1. Physical and Operational Characteristics

- Performance requirements:*
 - Must move in XY plane
 - Must be able to rotate 90 degrees
 - Must have a locking mechanism
- Safety:*
 - Must be mechanical
 - Must have a heating pad to keep monkeys warm
- Accuracy and Reliability*
 - Needs to have a mechanically controlled amount of precision
 - Needs to have consistency with positioning
 - Consistent initial securement for each monkey
- Life in Service:*
 - We want to design this board so that it will last for 10 years
- Shelf Life:*
 - Sterile before use
 - Easily storable
- Operating Environment:*
 - Laboratory research
 - Room Temperature- 15-30 degrees Celsius
- Ergonomics:*
 - Comfortable for the cynomolgus monkey
 - Increase efficiency of the research
 - Easy to use for the research

- h. *Size:*
 - i. Monkeys are 38 to 55 cm long
 - ii. *Weight*
 - 1. Females are 7 - 13 lbs
 - 2. Males are 11-20 lbs
- i. *Weight:*
 - i. Females are 7 - 13 lbs
 - ii. Males are 11-20 lbs
 - iii. Weight of Board: (find later)
- j. *Materials:*
 - i. Metal
 - ii. Plastic
- k. *Aesthetics, appearance, and finish:*
 - i. Function over aesthetics

2. Production Characteristics

- a. *Quantity:*
 - i. Only need to make one
- b. *Target Product Cost:*
 - i. \$200.00

3. Miscellaneous

- a. *Standards and Specifications:*
 - i. Follow monkey handling ethical specifications
 - ii. Must be safe and comfortable for monkeys
 - iii. Must decrease stress of monkey
- b. *Customer:*
 - i. Customer *must be* able to move to the table
- c. *Patient-related concerns:*
 - i. Don't want the researcher or monkey to get pinched
 - ii. Whole machine must be sterile
- d. *Competition:*
 - i. The competition is the board that they have right now