Topographical interrelationships of abdominal organs

One model- three active learning activities

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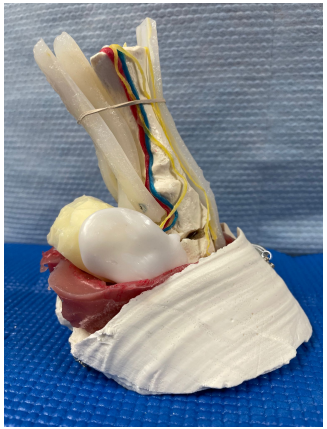
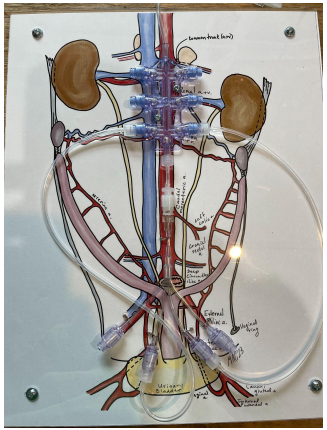
Why use models?

- Support active learning in groups
- Allow individualization of learning
- Provide low-stakes, low-stress activities

Models are:

- Durable, reusable & adaptable
- Portable, inexpensive & easily reproduced





Why this model?

to fill in gaps in knowledge

- Create 3D representations of challenging anatomical structures
  - Serous membranes
  - Mesenteries
  - Root of the mesentery
- Simulate normal & abnormal organ topography
- Integrate with developmental anatomy

How did I make it?

Drawing

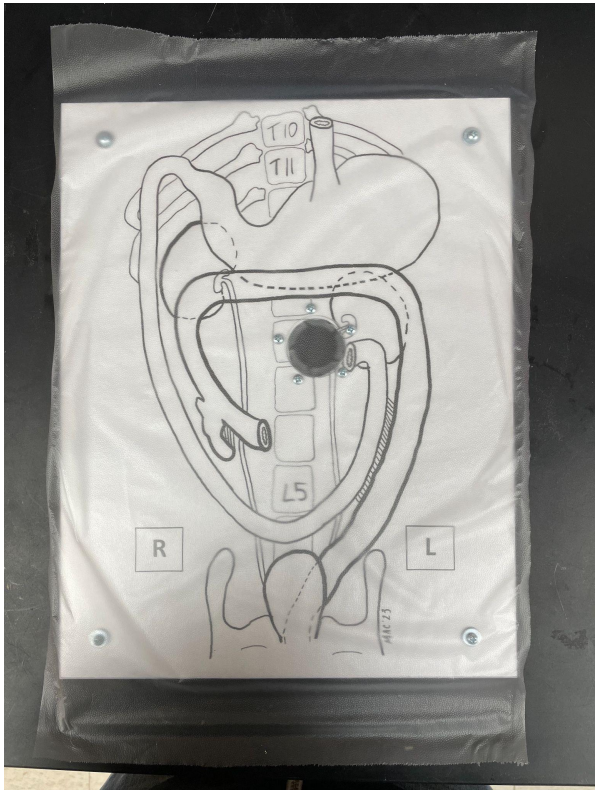
Based on Miller's Anatomy of the Dog, Figure 7-36, page 314.

Custom drawing

- iPad Air®, apple pencil® and Procreate® application

Components of Foundation

- 10 inch by 14 inch acrylic Sheets
  - 0.4 & 0.06 inch thickness
- 3/8 inch long, 6/32 inch width, Carriage Bolt, washer and nut
- Ring balloon clips
- 1 ¼ inch hole saw
- Press'N Seal®



Building the foundation

Step one: Tape edges of acrylic Sheets together- a thin & thick piece (Protective sheathing on)

Step 2: use a jig (pre-cut holes & use as template)

- Two sheets of plywood sandwich the acrylic Sheets
- Access to acrylic Sheets through pilot holes

Step 3: drill holes (variable speed drill)

- 1 ¼ inch (hole saw) for root of mesentery
- 3/16 " drill bit for ring clip and four corners

Using hole saw to cut acrylic sheets through pre-drilled holes (jig).

Assembly

- Secure image between Acrylic Sheets
  - Attach carriage bolts at corners
  - Attach Ring balloon clip around backside of central hole
- Attach Press'N Seal®, sticky side up, using Clear Tape
  - excise Press'N Seal® From central hole.

$10.29 EACH

1/8TH INCH THICK ACRYLIC SHEETS= $6.50 EACH
0.4 INCH THICK ACRYLIC SHEETS= $1.50 EACH
CARRIAGE BOLT, WASHER, NUTS= $15.00 FOR 100 EACH ($1.25 EACH)
RING BALLOON CLIP= 20 CENTS EACH
1 ¼ INCH HOLE SAW BLADE= $8.80 (73 CENTS EACH)
PRESS'N SEAL= $3.81 PER ROLL (11 CENTS EACH)

GI tract components

Stockinette: 1 & 3 inch

Roll cotton

1 inch rope

Clear plastic sheeting

1/4 inch T-shirt yarn

Tape

Kite string

Double-sided clear tape

Assembly of GI tract

Step 1: Tie pink T-shirt Yarn (tongue) around one end of 1" stockinette (esophagus).

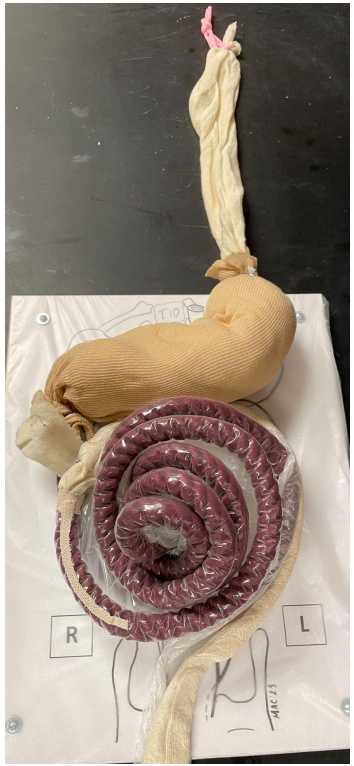
Step 2: Tie opposite end of 1" stockinette to a short piece of 3" stockinette with kite string.

Step 3: Stuff 3" stockinette with cotton (stomach).

Step 4: Insert 1" rope (intestines) into open/distal end of stomach and secure with kite string.

Step 5: At terminal end of 1" rope, Attach 1" stockinette (cecum & colon). Secure in place with tape. create antimesenteric artery With tape.

Step 6: fold plastic sheeting in half around GI tract distal to stomach. Secure in place in between plastic sheets with double-sided tape (double layered serous membranes). Add other structures as needed (pancreas).



$7.22

Stockinette: 1 & 3 inch, 25 yards= $10.00 each ($2.50 and 50 cents each).

Roll cotton (12" x 5'). $8.00 (20 cents each)

1 inch rope = $6.70 for 25 feet. Used in 8 foot sections. Need 3. $20.10 total. $2.24 each.

Clear plastic sheeting (upcycled). Free.

1/4 inch T-shirt yarn 35 m long. $2.70 total. 23 cents each.

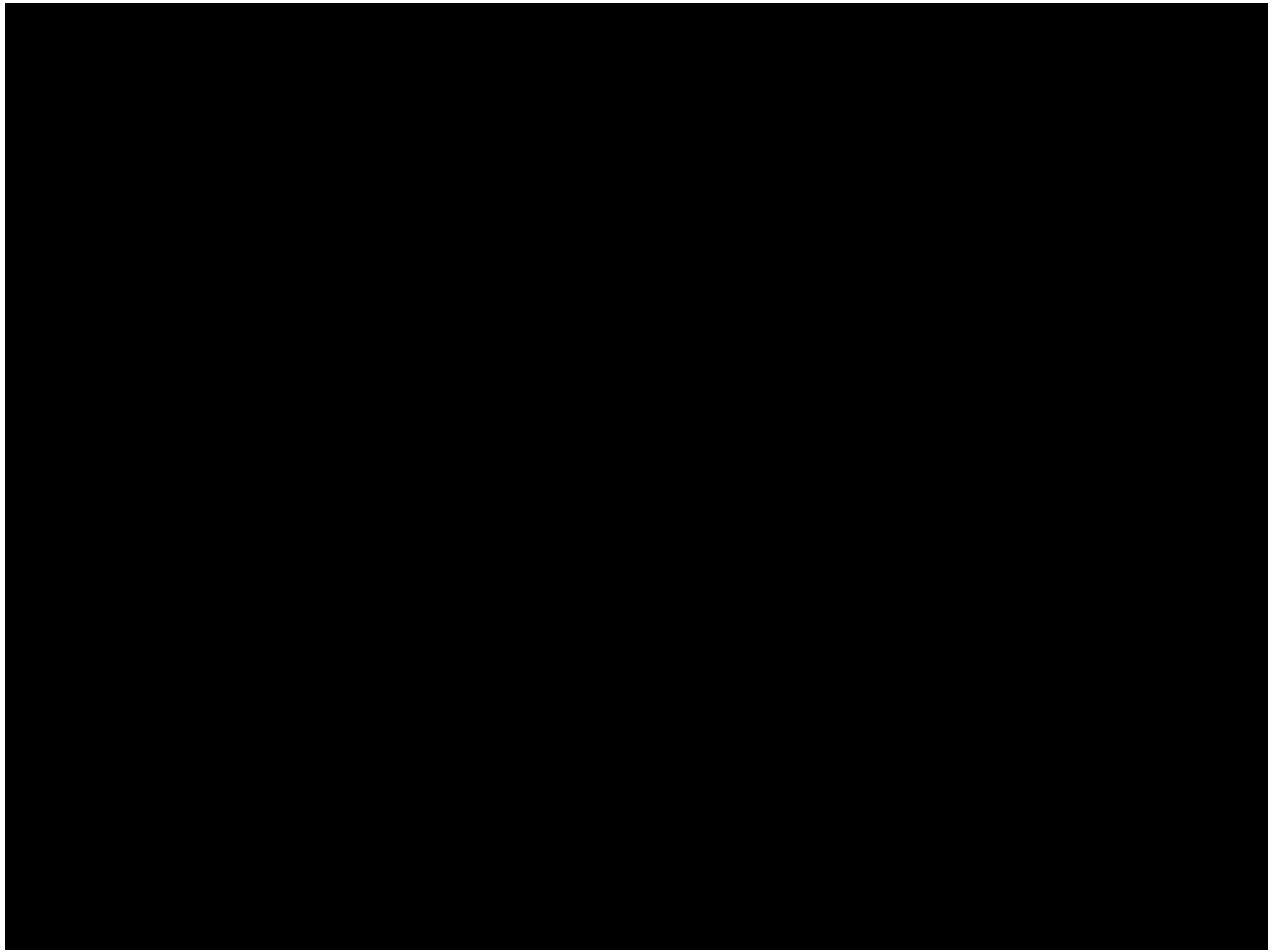
Tape. 2 cents a foot.

Kite string. 100 m for $2.17. 18 cents each.

Double-sided clear tape. $14.99 for 3,000 inches. Need 1,152 inches total. $1.25 each

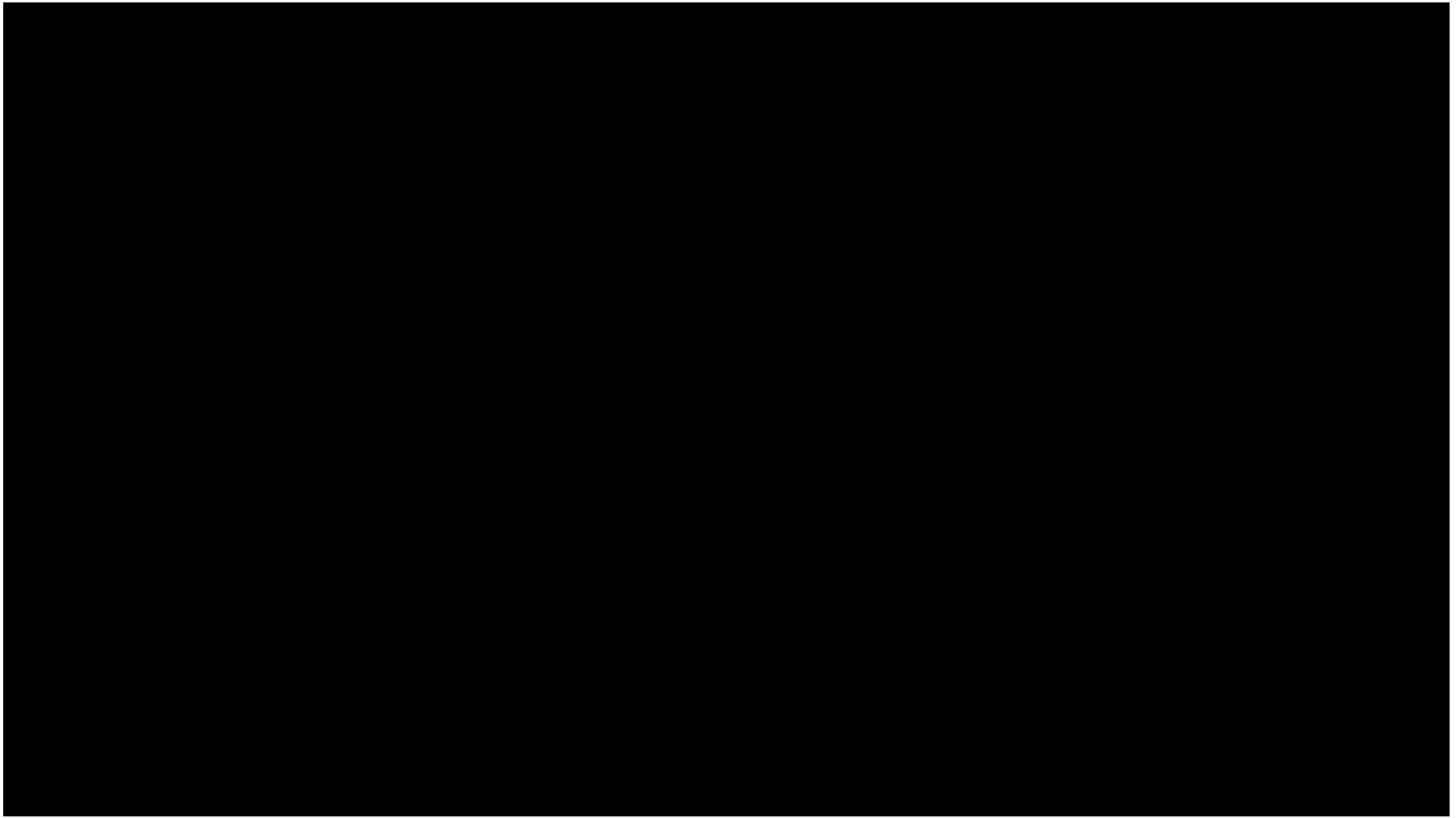
GI topography models cost $17.51 each.

How students combine the models



Your turn to build it!

Follow the instructions provided



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Demonstration of clinical relevance

Bonus models

Intentional correlation between models

Conclusion

Why should you use similar models?

What is student feedback?

Does this improve outcomes (measurable and significant)?

Questions?

Thank you for your time!