AnatoView User Guide

A complete guide to using AnatoView, the virtual dissection lab platform for pre-veterinary anatomy courses.

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Getting Started

Logging In

AnatoView is designed to integrate with your institution's Canvas LMS. There are two ways to access the application:

Via Canvas (production): Your instructor will add AnatoView assignments to your Canvas course. Click the assignment link in Canvas and you'll be automatically signed in through LTI single sign-on. Your name, email, role, and course are all synchronized from Canvas — no separate account creation is needed.

Direct access (development): If you're running AnatoView locally for development, the app automatically logs you in as a dev instructor. You can switch to a student role through the browser console (see the QUICKSTART guide for details).

Navigating the Interface

AnatoView uses a sidebar navigation layout:

- **Sidebar (left):** Contains the main navigation menu, a dark mode toggle, and your user profile card at the bottom. On mobile devices, the sidebar collapses into a hamburger menu.
- **Top bar:** Shows the current page title and a menu button to toggle the sidebar.
- **Main content area:** Displays the active page.

Navigation items visible to all users:

- **Dashboard** — Your home page with stats and lab assignments
- **Specimen Library** — Browse all available animals and structures

Additional navigation items for instructors and TAs:

- **Create Lab** — Build a new lab assignment (instructors and admins only)
- **Grade Center** — Review and manage student grades
- **Analytics** — View class performance data and charts
- **Manage Specimens** — Add or edit animal specimens (instructors and admins only)

The currently active page is highlighted in the sidebar with a blue tint and a left accent bar.

Dark Mode

AnatoView supports both light and dark themes. To toggle between them:

1. Look at the bottom of the sidebar, just above your user card.
2. Click the **moon icon** (to switch to dark mode) or the **sun icon** (to switch to light mode).
3. Your preference is saved automatically and persists across sessions.

Dark mode applies a refined dark color palette throughout the entire application, including the dissection viewer, cards, tables, and charts.

For Students

Student Dashboard

When you log in, you'll land on your Dashboard. It shows:

- **Welcome banner** with your name and a brief description of what you can do.
- **Stats row** with four cards:
  - **Active Labs** — Number of published labs available to you.
  - **Completed** — Total number of lab attempts you've made.
  - **Average Score** — Your overall average (when available).
  - **In Progress** — Labs you've started but not yet submitted.
- **My Assignments** — A grid of lab cards. Each card shows:
  - The lab title and published status.
  - The animal specimen (with thumbnail).
  - Organ systems covered (as colored chips).
  - Number of structures to identify.
  - Lab type (e.g., identification, quiz) and maximum points.
  - A **Start Lab** button (or **Continue** if you have a previous attempt).

Click **Start Lab** or **Continue** on any card to open the lab.

Starting a Lab

Before the dissection begins, you'll see a **Lab Preview page** with:

- **Lab header** showing the title, animal, organ systems, and point value.

- **Instructions** from your instructor explaining what to do.
- **Structures to Identify** — a numbered list of every structure you'll need to find. Each shows:
  - The structure name and Latin name.
  - A difficulty indicator: green (easy), amber (medium), or red (hard).
  - An optional description.
- **Sidebar information:**
  - **Time limit** (if set by your instructor) — a countdown begins when you click Start.
  - **Lab details** including animal, structure count, max points, hint penalty, and due date.
  - The large **Start Lab** button.

> ***Important:*** *If your instructor set a time limit, your timer begins the moment you click Start. If there is no time limit, you can save your progress and return later.*

Click **Start Lab** to enter the dissection viewer.

The Dissection Lab

The dissection lab is a full-screen interactive workspace. Here's what you'll see:

Top bar (left to right):

- **Timer** — Shows elapsed time in MM:SS format.
- **Progress bar** — Shows how many structures you've answered out of the total (e.g., "3/20 structures, 15%").
- **Score indicator** — Shows how many you've gotten correct so far (e.g., "2/3 correct").
- **Hints counter** — Shows total hints used across all structures.
- **Submit button** — Submit your lab when you're done.

Main canvas area (center/left):

- The interactive SVG dissection model. You can zoom, pan, and click on structures.
- A toolbar at the bottom for zoom controls and mode switching.
- A zoom percentage indicator in the bottom-right corner.

Right sidebar:

- **Structure Search** — Find structures by name.
- **Layer Panel** — Toggle organ system visibility.
- **Answer Input** — Type your answer when a structure is selected (in Identify or Quiz mode).
- **Answered Structures** — A summary of all structures you've answered, color-coded green (correct) or gray (incorrect).

Answering Questions

To identify a structure:

1. **Click on a highlighted structure** in the dissection viewer. It will be outlined in blue.
2. The **Answer Input** panel appears in the right sidebar showing the prompt "Type structure name..."
3. **Type your answer** in the text field. Spelling doesn't need to be perfect — the system accepts answers within 2 character edits (Levenshtein distance) of the correct name.
4. Press **Enter** or click the **Check** button.
5. You'll see immediate feedback:
    - **Correct:** A green success message showing the structure name. The structure turns green on the canvas.
    - **Incorrect:** A red error message showing what you typed. The structure turns red on the canvas.
6. Click another structure to continue.

What counts as a correct answer:

- The exact structure name (case-insensitive, ignoring punctuation).

- The Latin/scientific name.
- Any accepted aliases your instructor added (e.g., abbreviations, common alternate names).
- Close misspellings within 2 character edits (e.g., "aort" matches "aorta" with 1 edit).

Using Hints

If your instructor enabled hints, you can request them for additional help:

1. Select a structure and look at the Answer Input panel.
2. Click the **Hint** button (lightbulb icon, amber/yellow color).
3. A **Hint Drawer** slides in from the right showing the hint text for that structure.
4. Each hint used **reduces your score** for that structure by the penalty amount (typically 10%).
5. The hints counter in the top bar tracks your total hints used.

> ***Note:*** *Not all structures have hints. The Hint button only appears when a hint is available. Your instructor sets the hint penalty percentage when creating the lab.*

In **Explore mode**, you can also access hints through the structure popover by clicking "Show Hint (-10% penalty)."

Submitting Your Lab

When you've answered all the structures (or as many as you'd like):

1. Click the **Submit** button in the top bar (paper plane icon).
2. Your answers are saved and graded automatically.
3. You're redirected to the **Results page**.

> ***Tip:*** *You don't have to answer every structure before submitting. Unanswered structures will receive zero points. If your instructor allows multiple attempts, you can try again later.*

Reviewing Your Results

After submitting, you'll see the **Results page** with a detailed breakdown:

Score Card (top):

- A color-coded banner: green (85%+), amber (70-85%), or red (below 70%).
- Your **percentage score** prominently displayed.
- **Raw score** (e.g., "18.5 of 20 pts").
- **Correct count** (e.g., "17/20 correct").
- **Time spent** on the lab.
- **Instructor feedback** (if your instructor has provided any).

Structure Breakdown Table: A detailed table showing every structure with columns:

COLUMN	DESCRIPTION
Structure	Name and Latin name
Your Answer	What you typed (or "No answer")
Result	Green checkmark (correct) or red X (incorrect)
Hints	Number of hints used for this structure
Time	How long you spent on this structure
Points	Points earned for this structure

Rows are color-tinted: light green for correct answers, light red for incorrect.

Navigation buttons:

- **Back to Dashboard** — Return to your assignment list.
- **View Lab** — Go back to the lab preview page (to attempt again, if allowed).

Specimen Library

The Specimen Library lets you browse all available animal specimens without starting a lab:

1. Navigate to **Specimen Library** in the sidebar.
2. Browse the card grid showing each animal with its thumbnail, scientific name, and category.
3. Use the **search bar** to find animals by name.
4. Use the **Category filter** to show only specific groups (e.g., mammals, amphibians).
5. Each card shows the number of dissection models and which organ systems are available.

This is a great place to familiarize yourself with the available specimens before starting a lab.

For Instructors

Instructor Dashboard

Your Dashboard provides an overview of your course:

- **Stats row** showing:
  - **Active Labs** — Number of published labs.
  - **Total Attempts** — Combined student attempts across all labs.
  - **Pending Grades** — Submissions awaiting review.
  - **Canvas Synced** — Grade sync status.
- **Your Labs** — Cards for each lab you've created, showing:
  - Title, animal, organ systems, structure count, and lab type.
  - Published/Draft status.
  - Attempt count.
  - **Edit** button — Open the Lab Builder to modify settings.
  - **Results** button — Jump directly to the Grade Center for that lab.
- **Create New Lab** card (dashed border) — Click to open the Lab Builder wizard.

Creating a Lab

The Lab Builder is a 6-step wizard that guides you through creating a complete lab assignment.

Step 1: Select Animal

Choose the animal specimen for your lab:

- Browse the animal card grid showing thumbnails, names, and categories.
- Click an animal to select it (a blue border and checkmark appear).
- Each card shows the number of available models and organ systems.

> ***Note:*** *Changing the animal resets all subsequent steps (organ systems, structures, rubric).*

Step 2: Choose Organ Systems

Select which organ systems to include:

- Check the systems you want from the list (each shows a colored indicator).
- Use **Select All** / **Deselect All** to quickly toggle everything.
- A counter shows "X of Y selected."

Available systems vary by animal. Common systems include cardiovascular, digestive, respiratory, and nervous.

Step 3: Pick Structures

Choose the specific anatomical structures students will identify:

- A searchable data grid lists all structures from your selected systems.
- **Checkbox** each structure to include it in the lab.
- Filter by organ system using the chip buttons above the grid.
- Use **"All {system}"** buttons to bulk-select entire systems.
- For each selected structure, you can customize:
  - **Points** — How much the structure is worth (default: 1).

    - **Required** — Whether the structure must be answered (default: yes).

A summary shows the total selected structures and point values.

Step 4: Configure Rubric

Fine-tune grading for each structure:

- Expand each structure's accordion to configure:
    - **Accepted Aliases** — Add alternative names that will be marked correct (e.g., "AV valve" for "atrioventricular valve"). Type the alias and press Enter.
    - **Hint Penalty** — Percentage deducted per hint used (0-50%, default: 10%).
    - **Spelling Tolerance** — Accept answers within 2 character edits (default: on).
    - **Partial Credit** — Award 50% for fuzzy matches (default: off).
- If your lab covers multiple organ systems, you can set **Category Weights** to weight systems differently (e.g., cardiovascular worth 60%, digestive worth 40%).

Step 5: Lab Settings

Configure the overall lab parameters:

SETTING	DESCRIPTION	DEFAULT
Lab Title	Name shown to students (required, max 255 characters)	—
Instructions	Detailed directions displayed before the lab begins	—
Lab Type	Identification, Dissection, Quiz, or Practical	Identification
Due Date	Optional deadline	—
Time Limit	0-180 minutes (0 = no limit)	No limit
Attempts Allowed	1, 2, 3, 5, 10, or Unlimited	1
Passing Threshold	Minimum percentage to pass (0-100%)	60%
Show Hints	Allow students to request hints	On
Randomize Order	Randomize which structures are highlighted per student	Off

Step 6: Review and Publish

Review your complete lab configuration before publishing:

- **Lab Summary** table showing all settings at a glance.
- **Structure Details** table listing every structure with its points, required status, aliases, and hint penalty.
- **Validation warnings** appear as red alerts if required fields are missing.

Two publishing options:

- **Save as Draft** — Saves the lab without making it available to students. You can continue editing later.
- **Publish to Canvas** — Saves and publishes the lab, making it available to students. If Canvas is connected, it also creates the assignment in Canvas.

Editing a Lab

To edit an existing lab:

1. From the Dashboard, click **Edit** on any lab card.
2. The Lab Builder opens with all existing settings pre-filled.
3. Navigate through the steps to make changes.
4. Save as Draft or Publish when done.

Grade Center

The Grade Center is your hub for reviewing student submissions and managing grades.

Accessing it:

- Click **Grade Center** in the sidebar to see all labs, or
- Click **Results** on a specific lab card to jump directly to that lab's grades.

Page layout:

1. **Header** with a **LIVE** indicator (green pulsing dot when real-time updates are active) and subtitle.
2. **Action buttons:**
    - **Export CSV** — Download grades as a spreadsheet with columns for student name, email, attempt number, status, score, percentage, and Canvas sync status.
    - **Sync All to Canvas** — Push all graded scores to Canvas's gradebook in one click.
3. **Filters:**
    - **Lab selector** — Choose which lab's grades to view.
    - **Status filter** — Show all, or filter by graded/submitted/in-progress/not-started.
    - **Summary chips** showing total students, graded count, pending count, and class average.

Grade table columns:

COLUMN	DESCRIPTION
Student	Name and email
Attempt	Attempt number (e.g., #1, #2)
Score	Percentage with color coding (green 85%+, amber 70-85%, red below 70%)
Status	Current status (graded, submitted, in progress, not started)
Submitted	Date and time of submission
Canvas	Sync status icon (green check = synced, red X = failed, amber clock = pending)

Click any row to open the **Attempt Review** drawer.

Real-time updates: When a student submits a lab or a grade is updated, the Grade Center automatically refreshes without needing to reload the page. The green "LIVE" indicator confirms the WebSocket connection is active.

Reviewing Student Attempts

Click any row in the Grade Center table to open the **Attempt Review** drawer:

Student information:

- Student name, email, and attempt number.
- Submission date, time spent, and current status.

Score banner:

- Large percentage display with color coding.
- Raw score (e.g., "18 / 20 points").
- "PASSING" or "FAILING" indicator based on the lab's passing threshold.

Structure-by-structure breakdown: Each structure shows:

- Structure name and Latin name.
- Correct/Incorrect status indicator.
- The student's answer vs. the correct answer, displayed side by side.
- Difficulty level and hint penalty information.

- An override field for manually adjusting the score (see Grade Overrides).

Instructor Feedback: A text area where you can type personalized feedback for the student. This feedback appears on the student's Results page.

Grade Overrides

To manually adjust a student's grade for a specific structure:

1. Open the Attempt Review drawer by clicking a student's row.
2. Find the structure you want to override.
3. Enter the new point value in the **override field**.
4. Optionally type feedback in the **Instructor Feedback** text area.
5. Click **Save Changes**.

Overrides are useful when:

- A student's answer was close enough to be considered correct but didn't match the fuzzy matching threshold.
- You want to give partial credit for a partially correct answer.
- You need to adjust for special circumstances.

Canvas Grade Sync

AnatoView can automatically push grades to your Canvas gradebook:

Sync a single student:

1. Open the Attempt Review drawer.
2. Click **Sync to Canvas** at the bottom of the drawer.
3. The sync status icon in the grade table updates to reflect the result.

Sync all students:

1. Click **Sync All to Canvas** at the top of the Grade Center.
2. All graded attempts are pushed to Canvas.
3. A success or error message appears.

Sync status indicators:

- Green checkmark — Successfully synced to Canvas.
- Red X — Sync failed (check Canvas connection).
- Amber clock — Sync pending.
- Gray icon — Not yet synced.

Grade syncing is processed in the background by a dedicated worker service, so large classes won't block the interface.

Analytics

The Analytics page provides visual insights into class performance:

Accessing it: Click **Analytics** in the sidebar, then select a lab from the dropdown.

Overview stats (4 cards):

- **Total Attempts** — Number of student submissions.
- **Average Score** — Class average percentage.
- **Median Score** — Middle score value.
- **Average Time** — Average time students spent on the lab.

Charts:

1. **Score Distribution** — Bar chart showing how many students scored in each range (e.g., 0-10%, 10-20%, etc.). Helps identify if the lab difficulty is appropriate.
2. **Average Score Over Time** — Line chart showing how class performance trends across submission dates. Useful for spotting improvement over time.
3. **Structure Accuracy (Hardest First)** — Horizontal bar chart showing the accuracy rate for each structure, sorted from hardest to easiest. Bars are color-coded: green (85%+), amber (70-85%), red (below 70%). This helps you identify which structures students struggle with most.
4. **Average Hints Used by Structure** — Horizontal bar chart showing which structures students request the most hints for.

5. **Average Time Per Structure** — Horizontal bar chart showing how long students spend on each structure. Longer times may indicate difficulty or confusion.
6. **Accuracy by Difficulty Level** — Grouped bar chart comparing accuracy rates across Easy, Medium, and Hard structures.

Managing Specimens

The Specimen Management page lets you add, edit, and organize animal specimens.

Accessing it: Click **Manage Specimens** in the sidebar, or click the **Manage Specimens** button in the Specimen Library.

Animals Tab:

A table listing all specimens with columns:

- Thumbnail, name, scientific name, category, model count, status, and actions.
- **Edit** (pencil icon) — Opens the animal form dialog.
- **Toggle visibility** (eye icon) — Marks an animal as active/inactive. Inactive animals are dimmed and hidden from the Specimen Library.

Adding a new animal:

1. Click **Add Specimen**.
2. Fill in the form:
    - **Common Name** (required) — e.g., "Domestic Cat"
    - **Scientific Name** (optional) — e.g., "Felis catus"
    - **Category** (required) — Select from existing categories
    - **Description** (optional) — Background information
    - **Model Type** — SVG (2D Illustration), Three.js (3D Model), or Photographic
    - **Thumbnail** — Upload an image (PNG, JPEG, WebP, or SVG, max 5 MB)
3. Click **Add Specimen**.

Categories Tab:

Manage the groupings used to organize animals:

- Each category has a name, color, icon, and sort order.
- You can create, edit, or delete categories.
- Categories with assigned animals cannot be deleted.

The Dissection Viewer

The dissection viewer is the core interactive component of AnatoView. It renders SVG anatomical models on an HTML5 canvas with full zoom, pan, and interaction capabilities.

Canvas Controls

Zooming:

- **Mouse wheel** — Scroll up to zoom in, scroll down to zoom out. Zoom is centered on your cursor position.
- **Toolbar buttons** — Click the + and - buttons at the bottom of the canvas.
- **Zoom range** — 25% to 400%.
- **Reset View** — Click the center/crosshair button in the toolbar to reset to 100% zoom and re-center the model.

The current zoom level is displayed as a percentage in the bottom-right corner of the canvas.

Panning:

- Click and drag on empty space in the canvas to pan around the model.
- This is especially useful when zoomed in to examine fine structures.

Layer Panel

The Layer Panel (right sidebar) lets you control which organ systems are visible on the canvas:

- Each system has a **toggle switch** to show/hide it.

- Click the **system name chip** to isolate that system (hide everything else and show only that system).
- Click the chip again to deactivate isolation and show all systems.
- A counter at the bottom shows how many systems are currently hidden.

Toggling layers is useful for:

- Focusing on one system at a time to reduce visual clutter.
- Examining how different systems overlap anatomically.
- Finding structures that may be hidden behind other systems.

Dissection Modes

The toolbar at the bottom of the canvas has three mode buttons:

Explore Mode (compass icon)

- **Purpose:** Free exploration and studying without answering questions.
- **Behavior:** Clicking a structure opens a **popover** with detailed information:
  - Structure name and Latin name.
  - Difficulty level and tags.
  - Description and fun facts (when available).
  - Blood supply, innervation, muscle attachments, and clinical notes (when available).
  - A pronunciation button (when audio is available).
  - A "Show Hint" button (with penalty warning).
- **Labels:** Structure name labels appear when you hover over or select a structure.
- **Best for:** Studying before a lab, reviewing anatomy after a lab.

Identify Mode (touch icon)

- **Purpose:** Structured identification practice — type the name of each structure.
- **Behavior:** Clicking a structure selects it and activates the Answer Input in the sidebar.
- **Labels:** Appear on hover, when selected, or after answering.

- **Best for:** Practicing identification with immediate feedback.

Quiz Mode (quiz icon)

- **Purpose:** Blind testing — structure names are hidden until correctly answered.
- **Behavior:** Same as Identify mode, but labels are only revealed after you answer correctly.
- **Labels:** Hidden until you answer correctly. This simulates exam conditions.
- **Best for:** Self-testing and exam preparation.

Structure Search

The search bar at the top of the right sidebar lets you find structures by name:

1. Type a structure name (or part of it) in the search field.
2. Matching results appear in a dropdown (up to 8 results).
3. Each result shows the structure name, Latin name, and difficulty level.
4. If a structure is in a hidden layer, a small warning label appears.
5. Click a result to zoom to and select that structure. If its layer is hidden, it will be automatically revealed.

Available Specimens

AnatoView includes the following animal specimens and dissection models:

ANIMAL	SCIENTIFIC NAME	CATEGORY	MODELS	STRUCTURES
Domestic Cat	*Felis catus*	Mammal	Cardiovascular, Digestive	35
Norway Rat	*Rattus norvegicus*	Mammal	Cardiovascular	14
Fetal Pig	*Sus scrofa domesticus*	Mammal	Cardiovascular	18
Leopard Frog	*Rana pipiens*	Amphibian	Cardiovascular	12
Earthworm	*Lumbricus terrestris*	Annelid	Cardiovascular	10
Grasshopper	*Romalea microptera*	Arthropod	Cardiovascular	10
Crayfish	*Procambarus clarkii*	Arthropod	Cardiovascular	10

Notable comparative anatomy features:

- **Fetal Pig** includes fetal-specific structures: ductus arteriosus, foramen ovale, and umbilical vessels.
- **Leopard Frog** features a three-chambered heart with sinus venosus and conus arteriosus.
- **Earthworm** demonstrates aortic arches (hearts) and the dorsal/ventral vessel circulatory pattern.
- **Grasshopper and Crayfish** show open circulatory systems with dorsal heart tubes.

Grading System

AnatoView uses an automated grading pipeline with several layers of matching:

How Answers Are Graded

1. **Normalization** — Your answer is converted to lowercase, punctuation is removed, and extra spaces are collapsed.
2. **Exact matching** — Your normalized answer is compared against:
    - The correct structure name.
    - The Latin/scientific name.
    - Any accepted aliases added by your instructor.
3. **Fuzzy matching** — If no exact match is found and your answer is at least 3 characters, the system checks if your answer is within 2 character edits (Levenshtein distance) of any correct answer. This allows for minor typos and spelling variations.
4. **Partial credit** — If enabled by your instructor, fuzzy matches receive 90% credit (1 edit away) or 80% credit (2 edits away) instead of full credit.

Hint Penalties

Each hint you use for a structure reduces your score for that structure:

- The penalty is set by your instructor (typically 10% per hint).
- Multiple hints stack (e.g., 2 hints at 10% = 20% reduction).
- Your score for a structure cannot go below zero.

Score Calculation

Your total lab score is calculated as:

- Sum of points earned across all structures.
- Each structure's points = base points x correctness x (1 - hint penalty).
- If category weighting is configured, systems are weighted according to the instructor's percentages.
- Your percentage = (total earned / max possible) x 100.

Keyboard Shortcuts

KEY	ACTION	CONTEXT
Enter	Submit answer	Answer Input field
Escape	Close popover/drawer	Structure Popover, Hint Drawer
Mouse wheel	Zoom in/out	Dissection canvas
Click + drag	Pan the canvas	Dissection canvas (empty area)

Troubleshooting

"Access Denied" page

This usually means you accessed AnatoView directly instead of through Canvas. Solutions:

- Launch AnatoView from your Canvas course assignment.
- If you believe you should have access, contact your instructor or IT department.

Dissection model not loading

If the SVG model doesn't appear in the canvas:

- Check your internet connection.
- Try refreshing the page.
- Clear your browser cache and try again.
- Contact your instructor if the issue persists.

Timer started but I'm not ready

The timer begins when you click **Start Lab**. If your instructor set a time limit:

- There is no way to pause the timer once started.
- Make sure you've reviewed the instructions and structure list before clicking Start.
- If there is no time limit, you can leave and come back — your progress is saved automatically.

My answer was marked incorrect but I think it's right

The grading system accepts:

- The exact structure name (case-insensitive).
- The Latin name.
- Any aliases your instructor added.
- Close spellings within 2 character edits.

If you believe your answer should have been accepted, contact your instructor. They can:

- Add your answer as an accepted alias for future students.
- Override your grade in the Grade Center.

Can't find a structure on the canvas

Try these approaches:

1. Use the **Structure Search** bar in the right sidebar to find and zoom to the structure.
2. Check the **Layer Panel** — the structure's organ system might be hidden. Toggle layers to reveal it.
3. **Zoom in** to the area where you expect the structure to be.
4. Switch to **Explore mode** and hover over structures to see their names.

Progress not saving

AnatoView saves your answers automatically as you go. If you're concerned:

- Make sure you have a stable internet connection.
- Check for error messages in the top bar of the dissection view.

- Your progress should be restored if you leave and come back (as long as you haven't submitted).

Canvas grades not appearing

If your grade doesn't appear in Canvas after submission:

- Allow a few minutes for the background sync to process.
- Ask your instructor to check the Grade Center sync status.
- The instructor can manually trigger a Canvas sync from the Grade Center.