BioSketch - Development Milestone

Date: 9 December 2025 **Price:** $1,595 USD

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1. Database Work

Current State

- Migrations contained hardcoded seed data that failed on fresh databases
- ~130 RLS policies exist across tables with good foundation but gaps
- No seed script existed for populating initial data

Tasks

Seed Script:

- Remove seed data from migrations (`20251018034147`, `20251018033349`, `20251018213609`)
- Create `scripts/seed.ts` using service role key
- Add `npm run seed` script to package.json

RLS Policy Fixes:

- Add missing INSERT policy for `profiles` table (currently relies only on trigger)
- Allow unauthenticated users to view `icons` and `icon_categories` (for public landing page showcase)
- Verify no conflicts between overlapping `canvas_projects` SELECT policies (5 policies exist: owner, public, approved, admin, collaborator)
- Ensure `login_attempts` policies work correctly with edge functions using service role

Tests

- Unauthenticated user can read icons and categories
- Authenticated user can only view own projects + public projects
- User cannot access another user's private project
- Admin can access all resources
- Collaborator can access shared projects

2. Authentication & Email Verification

Current State

- Supabase Auth is configured (email templates may already be configured in Supabase Dashboard - unknown without project access)
- Login attempts tracked in `login_attempts` table
- Profile creation happens on user signup via trigger
- Existing UX for email verification:
  - Sign-up shows toast: "Account created! Please check your email to verify."
  - Password reset shows toast: "Check your email - We've sent you a password reset link"
  - Auth page handles `recovery` type in URL hash to show password update form
- No custom Edge Function for branded email delivery
- No dedicated verify email page - users stay on auth page after signup

Tasks

- Set up Resend account and obtain API key for branded email delivery
- Create Supabase Edge Function `send-email` to handle auth emails via Resend
- Configure Edge Function in `supabase/config.toml`
- Implement branded email templates for `signup` and `recovery`
- Create user-facing verify email page at `/auth/verify-email`
- Update sign-up flow to redirect to verify email page after submission
- Implement sign-in handling for unverified emails:
  - Catch "email not confirmed" error
  - Auto-resend verification email via `supabase.auth.resend()`
  - Redirect to verify email page with toast notification
- Enable Send Email hook in Supabase Dashboard (Authentication > Hooks)

Tests

Signup & Verification:

- User can sign up with email and password
- Sign-up redirects to `/auth/verify-email` after form submission
- Verify email page displays "Check your email" heading and return link

Unverified Email Handling:

- Sign-in with unverified email shows error or redirects to verify page

Login & Session:

- User can log in with valid credentials
- User sees error message with invalid credentials
- User session persists across page refresh
- User can log out and session is cleared

Password Reset:

- User can request password reset
- Password reset page allows setting new password

Test Helper:

- Create `confirmUserEmail(email)` utility using Supabase Admin API for programmatically verifying users in E2E tests

3. AI Provider Refactor

Current State

- AI features use Lovable AI Gateway (`ai.gateway.lovable.dev`) which proxies to Google Gemini
- `LOVABLE_API_KEY` stored as Supabase Edge Function secret
- Three AI-powered features:
  - AI Icon Generator (`generate-icon-from-reference`) - uses `google/gemini-2.5-flash-image-preview`
  - AI Figure Generator (`generate-figure-from-reference`) - analyzes diagrams and recreates with icons
  - PowerPoint Generation (`generate-powerpoint`) - configurable Manus AI or Lovable AI
- Admin settings page allows switching between Manus and Lovable providers
- Usage tracking in `ai_generation_usage` table with monthly quotas

Tasks

- Set up OpenRouter account and obtain API key
- Add `OPENROUTER_API_KEY` as Supabase Edge Function secret
- Update `generate-icon-from-reference` Edge Function:
  - Replace Lovable AI Gateway URL with OpenRouter API (`https://openrouter.ai/api/v1`)
  - Update authentication header format for OpenRouter
  - Select appropriate image generation model (e.g., `google/gemini-2.0-flash-exp:free` or similar)
- Update `generate-figure-from-reference` Edge Function with OpenRouter
- Update `generate-powerpoint` Edge Function to use OpenRouter as Lovable replacement
- Update admin AI settings page to reflect new provider options
- Remove `LOVABLE_API_KEY` from Edge Function secrets after migration
- Update `ai_provider_settings` table default values if needed

Tests

- AI icon generation returns a non-empty image response via OpenRouter
- AI figure generation returns a valid response with canvas objects

- PowerPoint generation returns a downloadable file via OpenRouter
- Rate limiting and quota tracking still function correctly
- Error handling displays appropriate messages for OpenRouter errors

4. Canvas Editor

Current State

- Fabric.js-based canvas with extensive drawing tools (selection, text, shapes, lines, connectors)
- Properties panel for styling, layers panel for z-order management
- Grid system with snap-to-grid, undo/redo history, auto-save
- Icon library with categorized SVG icons and user asset uploads
- AI figure and icon generation with usage quota tracking
- Export to PNG/JPEG/SVG with DPI and quality options
- Project sharing via URL, PowerPoint generation
- Projects stored in `canvas_projects` table with version history

Tests

Drawing Tools:

- User can create, select, and modify objects
- User can use undo/redo to navigate history
- Grid snapping works when enabled
- Scientific connectors can be created and attached to objects (inhibition, activation, phosphorylation markers)
- Orthogonal line tool creates lines with 90-degree segments
- Curved line tool creates lines with control points
- Multi-object selection and grouping works
- Command palette opens and executes actions

Layers:

- Layer visibility toggle hides/shows objects
- Layer lock prevents object modification
- Layer reordering changes z-index correctly

Icon Library & Assets:

- User can browse and search icons
- User can drag icon onto canvas
- User can upload and delete custom assets

Projects:

- User can create and save a new project
- User can open and edit existing project
- User can delete a project
- User can view and rollback to previous version
- Changes auto-save to database
- Project thumbnail generates as a non-empty image
- Project metadata (keywords, citations) saves and displays

AI Features:

- User can generate AI figure from prompt
- User can generate AI icon from prompt
- User is blocked when quota exceeded
- Error message shown on API failure

Export & Sharing:

- User can export canvas as PNG/JPEG/SVG
- User can export with transparent background
- User can select export DPI (150, 300, 600)
- JPEG quality slider affects output file size
- Selection-only export includes only selected objects
- User can share project via URL
- Shared URL loads project correctly

5. Community Features

Current State

- Community page displays public projects with filtering and search
- Projects can be liked, downloaded, and cloned
- Author profiles show user's public work
- Trending and featured projects sections
- Share page for inviting others via email at `/share`

Tests

- User can browse community projects
- User can search and filter projects
- User can like and unlike projects
- User can clone a public project
- Trending projects section displays projects
- Author profile shows correct projects and stats
- Verified creator badge is visible on eligible profiles
- User can send invitation email via share page

6. Blog System

Current State

- Blog posts with TipTap rich text content
- Categories and tags for organization
- Blog listing with pagination
- Admin interface for creating/editing posts
- SEO metadata and view counting

Tests

- User can browse blog posts
- User can filter by category and tag
- User can read individual blog post
- Admin can create and edit blog posts
- Admin can manage categories and tags

7. Admin Dashboard

Current State

- Admin dashboard with navigation to sub-sections
- Analytics dashboard, icon manager, testimonial manager
- AI settings, rate limits configuration
- Project approval interface
- Announcement system for in-app notifications (with audience targeting)
- Bulk email system via Resend (creates both email and in-app notification)

Tests

- Non-admin user cannot access admin routes
- Admin can view analytics dashboard
- Admin can add/edit/delete icons
- Admin can approve/reject testimonials
- Admin can approve/reject icon submissions
- Admin can configure AI settings
- Admin can approve/reject community projects
- PowerPoint template builder saves template to database
- Admin can configure rate limits
- Admin can send announcement to users
- Admin can send bulk email to users

8. Profile & Settings

Current State

- User profile page with avatar, bio, stats
- Profile editing, avatar upload with Gravatar fallback
- Password change functionality
- AI generation and download quota display
- In-app notifications inbox with read/delete actions
- Notification bell in header shows unread count

Tests

Profile:

- User can view their profile
- User can edit profile information
- User can upload profile avatar
- Profile changes persist after refresh
- Profile displays AI generation quota
- Profile displays download quota

Settings:

- User can change password

Notifications:

- Notification bell displays unread count
- User can view notifications in profile
- User can mark notification as read
- User can delete notification

9. Contact, Submissions & Testimonials

Current State

- Contact page with hCaptcha integration
- Icon submission system at `/my-submissions`
- Tool feedback collection
- Testimonials page for submission and display at `/testimonials`

Tests

Contact:

- Contact form displays hCaptcha and submit button

Icon Submissions:

- User can submit icon for review
- User can view their submission status at `/my-submissions`

Testimonials:

- User can submit a testimonial at `/testimonials`
- Approved testimonials display on `/testimonials` page
- Unapproved testimonials are not visible publicly

Notes

Optional refactor: Hover tilt effects could be replaced with subtler alternatives (scale, shadow, border) to improve click accuracy and accessibility.