BioSketch - Repository Overview

Date: 10 December 2025 **App Name:** BioSketch - Professional Scientific Illustration Software

---

Tech Stack

- **Frontend:** React 18, TypeScript, Vite
- **Styling:** Tailwind CSS (notebook-themed aesthetic)
- **UI Components:** Radix UI, shadcn/ui
- **Canvas:** Fabric.js
- **Backend:** Supabase (auth, database, storage)
- **State:** React Context, TanStack React Query
- **Rich Text:** TipTap editor

Pages & Routes

Public Pages

Route	Description
`/`	Landing page with hero, testimonials, featured projects, blog carousel
`/auth`	Sign in/up, password reset, account recovery
`/terms`	Terms of Service
`/testimonials`	User testimonials showcase
`/release-notes`	Feature changelog
`/contact`	Contact form
`/share`	Project sharing page

Protected Pages (Requires Auth)

Route	Description
`/canvas`	Main illustration editor
`/projects`	User's saved projects gallery
`/profile`	User profile, stats, settings
`/community`	Public projects gallery with search/filter
`/author/:userId`	Author profile showcase
`/blog`	Blog listing with categories and search
`/blog/:slug`	Individual blog post reader
`/my-submissions`	User's icon submission tracker

Admin Pages

Route	Description
`/admin`	Admin dashboard
`/admin/analytics`	User analytics and exports
`/admin/email-notifications`	Email campaign management
`/admin/powerpoint-generator`	PowerPoint template builder
`/admin/ai-settings`	AI provider configuration
`/admin/rate-limits`	Rate limiting controls
`/admin/blog`	Blog post management
`/admin/blog/categories`	Category management
`/admin/blog/tags`	Tag management

Core Functionality

Canvas Editor

- Vector-based drawing with shapes, text, images
- Scientific connectors with biological markers (inhibition, activation, phosphorylation)
- Orthogonal and curved line tools
- Grid system with snap-to-grid (lines, dots, isometric patterns)
- Layer management with visibility/lock controls
- Journal-specific paper sizes (Nature, Science, Cell, PNAS, eLife, etc.)
- Undo/redo with version history
- Multi-object selection, grouping, alignment guides

Asset Library

- Extensive biomedical SVG icon library organized by category
- User-uploaded assets management
- Icon search and favorites
- Community icon submission system

Export Options

- PNG (150, 300, 600 DPI) for publication quality
- JPEG with quality settings
- SVG for vector editing
- Transparent background option
- Selection-only export

AI Features

- AI figure generation from text prompts
- AI icon generation
- Style transfer effects
- Usage quota tracking

Project Management

- Auto-save with status indicators
- Public/private project visibility
- Project sharing and cloning
- Thumbnail generation
- Metadata (title, description, keywords, citations)
- View/like tracking

Community

- Public project gallery with filtering
- Trending projects
- Project cloning with attribution
- User profiles with stats
- Verified creator badges
- Admin approval workflow

Blog System

- Rich text editor with TipTap
- Categories and tags
- SEO metadata and OG images
- View counting and reading time
- Related posts suggestions

Key UI Components

Canvas Components

- **FabricCanvas** - Main drawing surface
- **TopToolbar** - File operations, shortcuts
- **ContextualToolbar** - Context-sensitive tools
- **Toolbar** - Left-side drawing tools
- **PropertiesPanel** - Object properties editor
- **LayersPanel** - Layer management
- **IconLibrary** - SVG icon browser
- **ExportDialog** - Multi-format export settings
- **VersionHistory** - Project version rollback
- **CommandPalette** - Quick action search

Community Components

- **ProjectCard** - Project preview with thumbnail
- **ProjectPreviewModal** - Full project preview
- **CommunityCarousel** - Featured projects
- **IconSubmissionDialog** - Custom icon submission

Admin Components

- **IconManager** - Icon CRUD operations
- **IconUploader** - Bulk icon import
- **SubmittedProjects** - Project approval interface
- **TestimonialManager** - Testimonial CRUD
- **PowerPointTemplateBuilder** - Template design tool
- **AnalyticsDashboard** - User statistics

User Roles

Role	Access
Anonymous	Public pages, view community projects
Authenticated	Canvas editor, projects, community features
Admin	Full admin panel, content management, analytics

Data Models (Summary)

- **Profiles** - User info, avatar, bio, country, field of study
- **Canvas Projects** - Project data, thumbnails, visibility, approval status
- **Project Versions** - Version history for rollback
- **Icon Items** - SVG icons with categories and thumbnails
- **Icon Submissions** - Community-submitted icons pending approval
- **Blog Posts** - Rich content with SEO, categories, tags
- **User Assets** - Uploaded files and images
- **Contact Messages** - Form submissions
- **Tool Feedback** - User ratings and feedback

Design Philosophy

BioSketch uses a **notebook-themed aesthetic** with pencil-drawn styling, inspired by scientific research workflows. The interface prioritizes:

- Professional publication-quality output
- Intuitive tools familiar to researchers

- Extensive scientific icon library
- Collaboration and community sharing
- AI-assisted content creation