

Database User Guide

To address the accessibility concerns regarding our website and the HEART resource (<https://db.genomics.cn/stomics/heart/>), we have implemented a multi-faceted verification and enhancement strategy, detailed as follows:

Broad User Testing for Reliability: To verify stable access beyond our development team, we proactively invited independent users from diverse geographical regions (China, Europe, and the USA) to visit the HEART page. All tests were completed successfully with no access failures reported, confirming the resource's robust accessibility.

Cross-Browser Compatibility Check: To ensure the website functions correctly across different platforms, we conducted rigorous testing using major web browsers, including Google Chrome, Microsoft Edge, and Safari. The interface and data links performed as expected in all environments (**Fig. App-1, App-2, and App-3 for screenshots**), demonstrating comprehensive compatibility.

Enhanced User Guidance: To prevent any potential user-side navigation issues, we have now created and published a detailed step-by-step instruction document. This guide is permanently available on the dedicated 'Download' page of the website and is also attached to this response for the reviewers' immediate convenience.

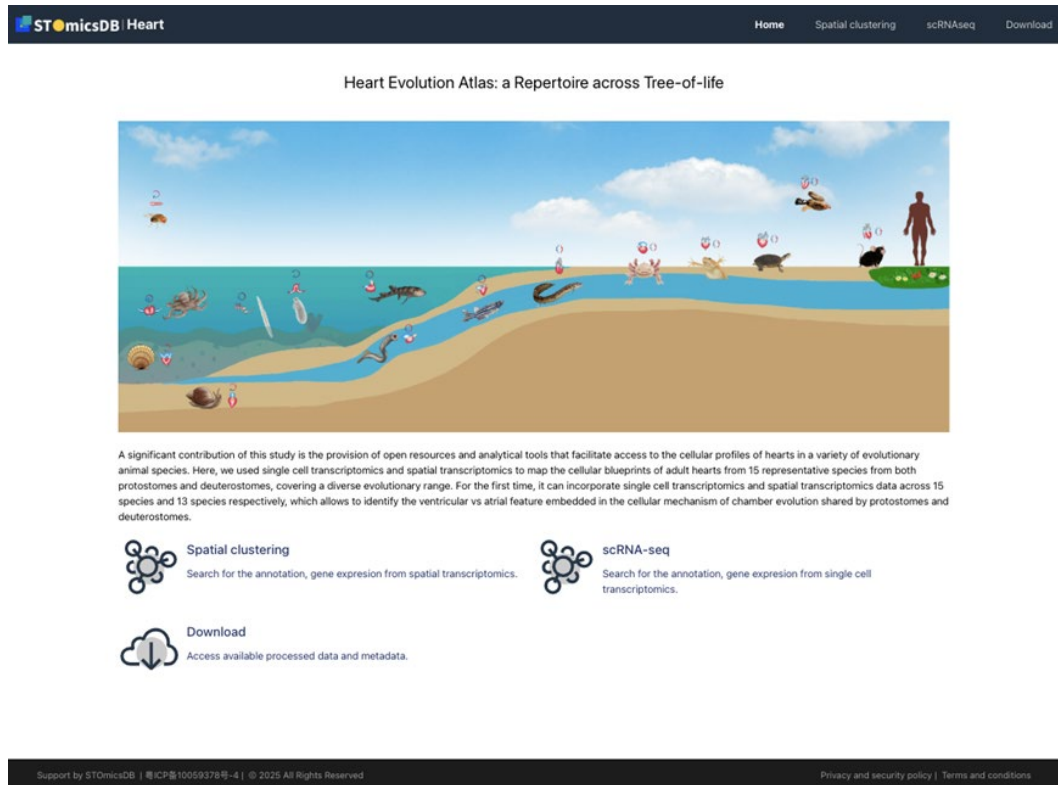


Fig. App-1. Screenshot of visiting the HEART page by Google Chrome.

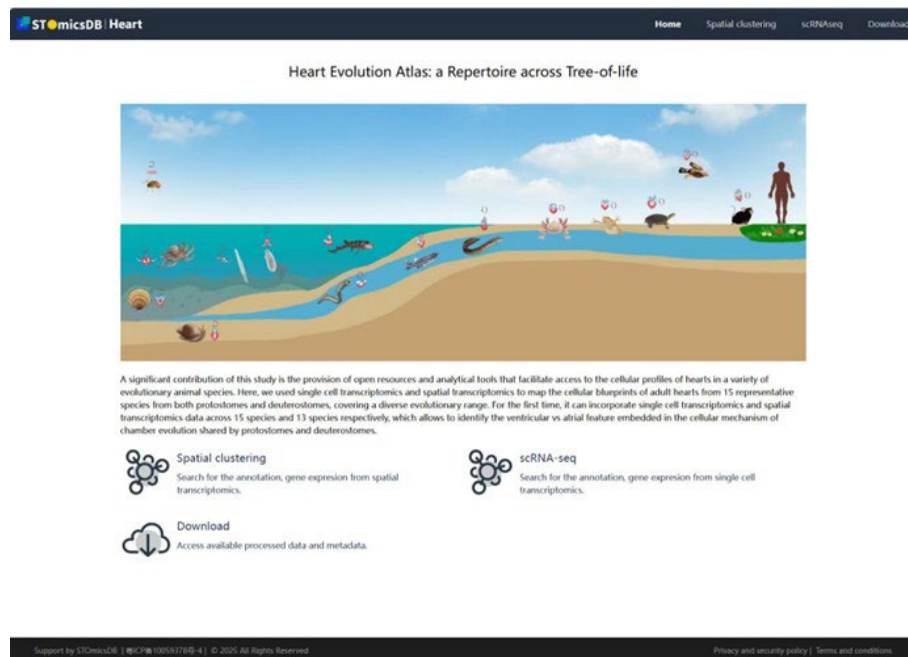


Fig. App-2. Screenshot of visiting the HEART page by Microsoft Edge.

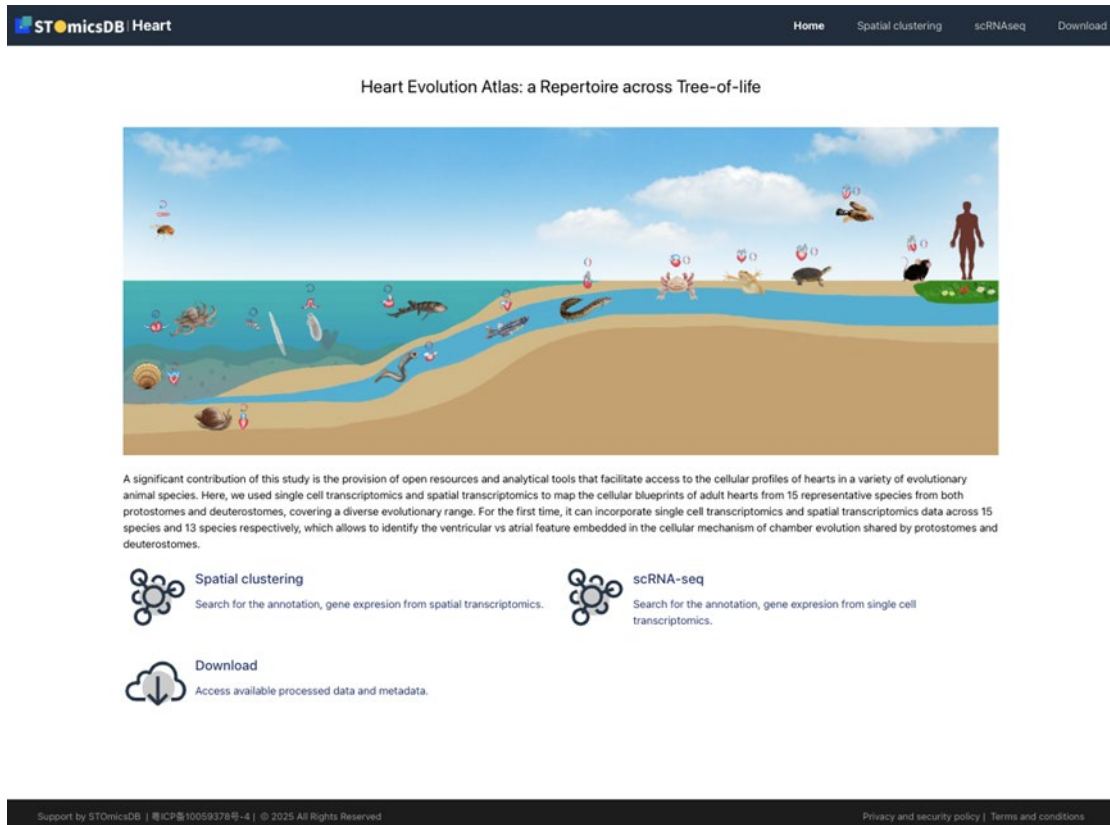


Fig. App-3. Screenshot of visiting the HEART page by Safari.

1, Home

All navigation begins from the Home page.

Navigation Overview

The top navigation bar contains four sections:

1) Home

Provides an overview and introduction to the HEART project (Fig. App-4).

2) Spatial Clustering

Displays spatial transcriptomics maps for comprehensive tissue-level visualization and exploration (Fig. App-5).

3) scRNA

Presents single-cell transcriptomic maps, enabling interactive exploration of cellular resolution data (Fig. App-6).

4) Download

Offers direct access to all datasets for download (Fig. App-7).

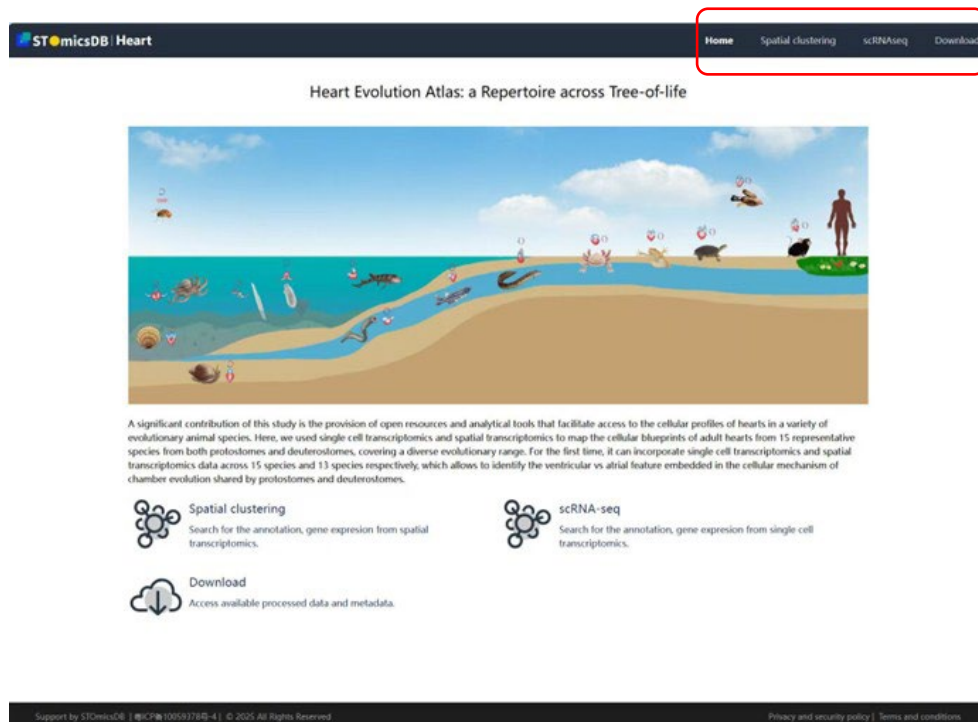


Fig. App-4. Screenshot of visiting the Home page.

2, Spatial-clustering

Within the Spatial Clustering section, users can select the spatial transcriptomics clustering results of different species via the File name dropdown menu. The visualization can be displayed in four formats: Clustering, Heatmap, Dot Plot, and Violin Plot.

The Options panel allows users to customize the view by selecting specific clusters to display or by visualizing the expression levels of genes of interest.



Fig. App-5. Screenshot of visiting the Spatial clustering page.

3, scRNA-seq

Within the scRNA section, the functions are largely consistent with those in the Spatial Clustering page. In addition, the file `sc_fordatabase.h5ad` provides the integrated single-cell transcriptomic results across all species.

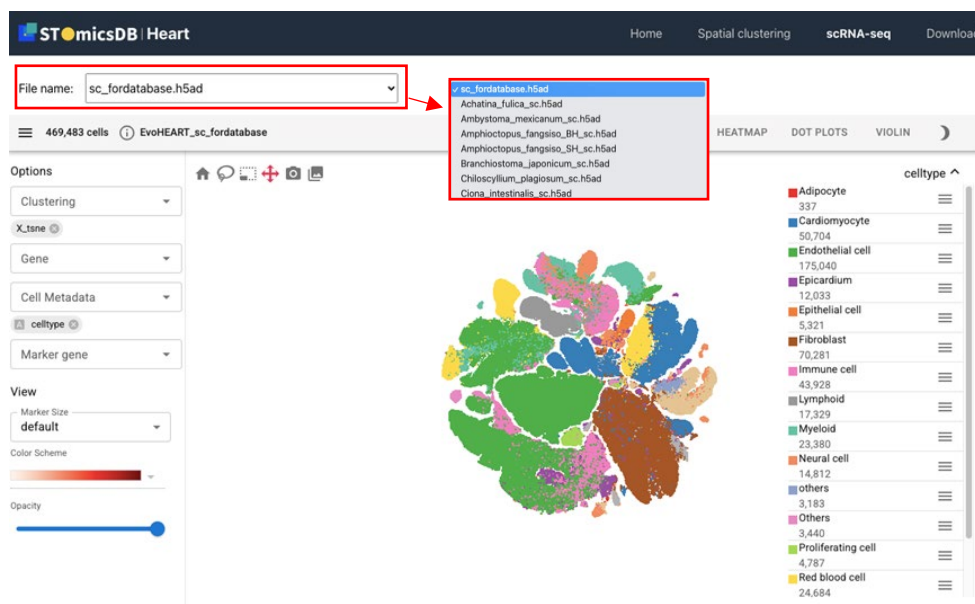
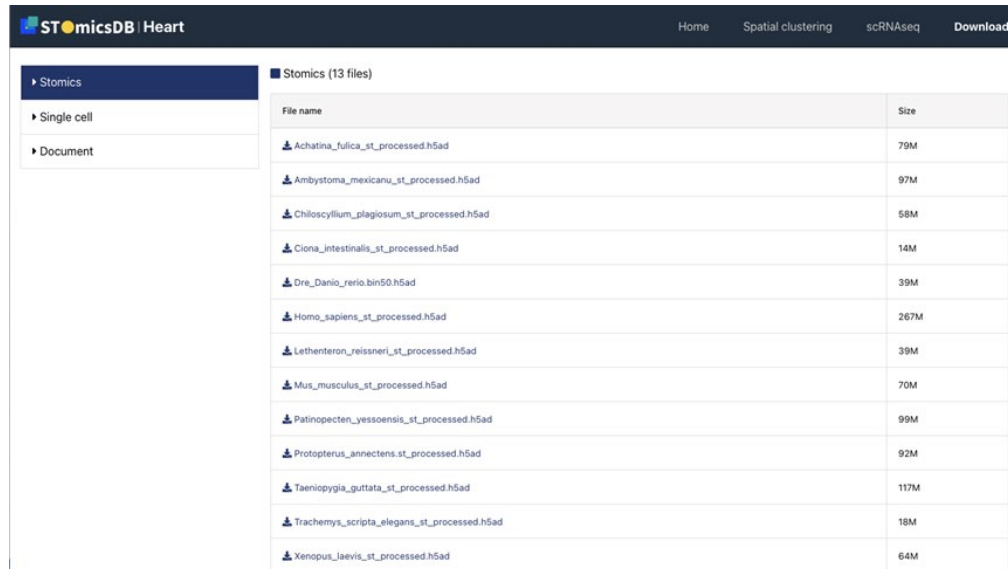


Fig. App-6. Screenshot of visiting the scRNA-seq page.

4, Download

The **Download** section provides access to all available datasets, including both single-cell and spatial transcriptomics results in **.h5ad** format.



The screenshot shows the STomicsDB | Heart website interface. The top navigation bar includes links for Home, Spatial clustering, scRNAseq, and Download. The left sidebar shows a menu with 'Stomics' selected, and sub-items 'Single cell' and 'Document'. The main content area displays a table of 13 files under the heading 'Stomics (13 files)'.

File name	Size
Achatina_fulica_st_processed.h5ad	79M
Ambystoma_mexicanu_st_processed.h5ad	97M
Chiloscyllium_plagiosum_st_processed.h5ad	58M
Ciona_intestinalis_st_processed.h5ad	14M
Dre_Danio_rerio_bin50.h5ad	39M
Homo_sapiens_st_processed.h5ad	267M
Lethenteron_reissneri_st_processed.h5ad	39M
Mus_musculus_st_processed.h5ad	70M
Patinopecten_yessoensis_st_processed.h5ad	99M
Protopterus_annectens_st_processed.h5ad	92M
Taeniopygia_guttata_st_processed.h5ad	117M
Trachemys_scripta_elegans_st_processed.h5ad	18M
Xenopus_laevis_st_processed.h5ad	64M

Fig. App-7. Screenshot of visiting the Download page.