

# Biological Animations: A Comparison of Morph 2.5 and GifBuilder 0.5

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Usefulness ☺ Ease of Use ☺ Freedom from Bugs ☺ Summary 📄 Score: 8.5

## Introduction

(Editor's Note: The ratings shown above are for Morph 2.5)

The dissemination of information via the World Wide Web (WWW) has become a powerful tool for educators and students at all levels. The benefits of presenting educational materials on the WWW extend to both students and teachers. Research data and other materials can be posted quickly and easily, and are accessible to a large number of people. Students can use the WWW to access visual information that cannot be distributed by standard media. Since many biological events occur over a period of time, QuickTime (QT) movies and GIF animations can be used to demonstrate dynamic processes. This review compares Morph and GifBuilder, which can generate different kinds of animations that can be distributed via the WWW. Examples of GIF animations and Morphed QT movies can be found at: [www.bio.davidson.edu/biology/animate.html](http://www.bio.davidson.edu/biology/animate.html).

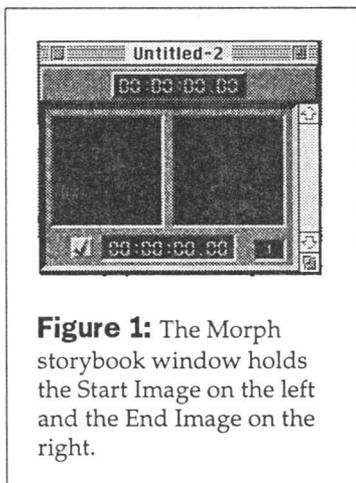
## Morph

Morph 2.5 is a powerful software package that performs a gradual transformation of one image into another ("morphing"). The input images for a Morph sequence can be scanned photos, text, drawings, or QuickTime movies. The output may be any of the following: a movie of the entire or partial transformation, a still image from an in-

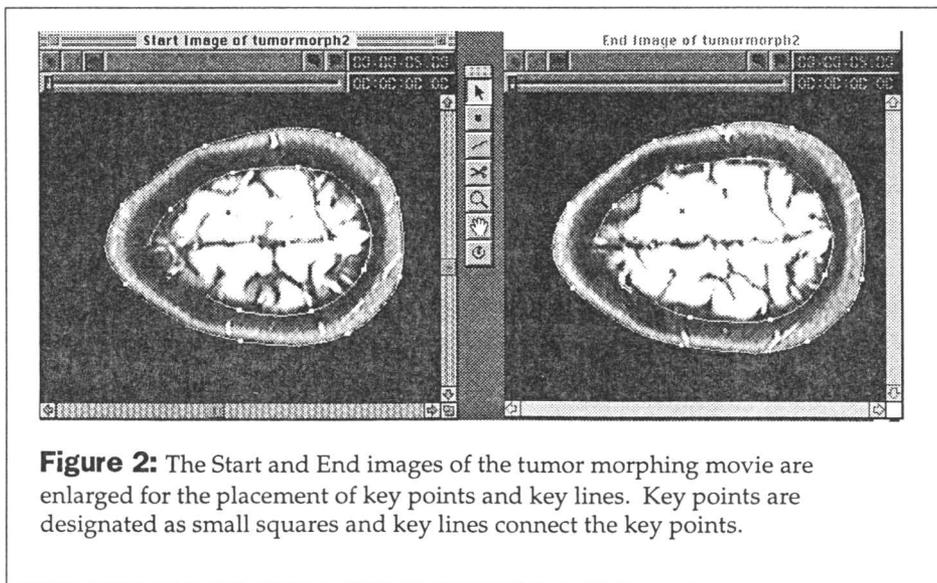
termediate point within the transformation, or a print-out of frames to make a flipbook. Many visual effects can be generated using Morph, the simplest of which is a direct metamorphosis of one image into another. For example, one human face can be transformed into another face by morphing between two input photographs. Caricaturing and warping, two additional features of Morph, are more complicated transformations that involve the exaggeration or deformation of one or more of the input images and, as such, are not biologically relevant and will not be reviewed.

## GifBuilder

GifBuilder 0.5 is a freeware utility designed for creating animated GIF files using existing GIF, PICT, TIFF, or Photoshop images, a QuickTime movie, an Adobe Premiere FilmStrip 1.0 file, a PICS file, or the layers of an RGB or grayscale Adobe Photoshop 3.0 file. The output animation is a GIF89a file made up of multiple images presented as a sequence. In general, GifBuilder is used to illustrate any dynamic process that can be represented by a series of distinct steps. GIF animations would be useful to illustrate a series of events in a protocol or metabolic pathway, for example.



**Figure 1:** The Morph storybook window holds the Start Image on the left and the End Image on the right.



**Figure 2:** The Start and End images of the tumor morphing movie are enlarged for the placement of key points and key lines. Key points are designated as small squares and key lines connect the key points.

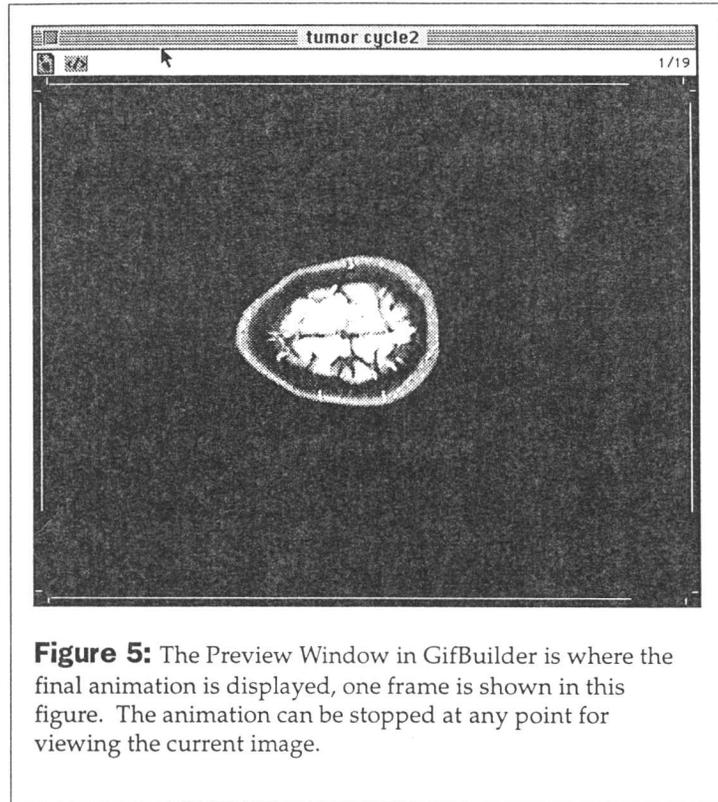


**Figure 3:** The Export Movie command is located within the File menu in Morph.

This comparison and review of the two programs was performed on a Power Macintosh 7200/120 with 32 MB of RAM. Morph requires at least 10 MB of hard drive space and 5 MB RAM. GifBuilder requires 351K on the hard drive and 4 MB RAM. For longer sequences in GifBuilder, you may need to increase the memory partition using Get Info in the File menu of the Finder before launching the program.

## Biological Applications

Both Morph and GifBuilder are capable of producing animations of dynamic biological processes such as embryonic development, gametogenesis, flowering, DNA replication, mitosis, and meiosis. The choice of which program to use depends on the quality and complexity of the input images and the desired animation effect. If a continuous transformation is needed, Morph is the right program. For example, if each image in the sequence were quite different from the previous one but you wanted to simulate a continuum, you could perform a transforma-



**Figure 5:** The Preview Window in GifBuilder is where the final animation is displayed, one frame is shown in this figure. The animation can be stopped at any point for viewing the current image.

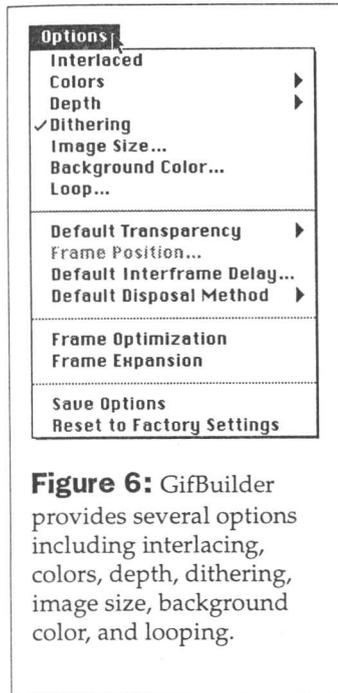
tion in Morph to simulate the intermediate stages. If you were to perform such a sequence in GifBuilder, the resulting animation would not flow as smoothly.

Frames					
19 frames	Length: 5.70 s	Size: 475x375	No loop		
Name	Size	Position	Disp.	Delay	Transp.
Frame 1	432x306	(0; 0)	N	30	-
Frame 2	179x151	(136; 110)	U	30	-
Frame 3	198x165	(122; 101)	N	30	-
Frame 4	203x182	(120; 100)	N	30	-
Frame 5	459x371	(0; 0)	N	30	-
Frame 6	417x329	(0; 20)	N	30	-
Frame 7	420x346	(0; 29)	N	30	-
Frame 8	445x349	(0; 0)	N	30	-
Frame 9	447x370	(0; 5)	N	30	-
Frame 10	426x330	(0; 33)	N	30	-
Frame 11	417x354	(28; 21)	N	30	-
Frame 12	411x339	(21; 33)	N	30	-
Frame 13	432x340	(16; 35)	N	30	-
Frame 14	444x356	(0; 19)	N	30	-
Frame 15	432x339	(13; 36)	N	30	-
Frame 16	432x339	(10; 33)	N	30	-
Frame 17	432x336	(7; 39)	N	30	-
Frame 18	432x333	(8; 42)	N	30	-
Frame 19	432x339	(19; 36)	N	30	-

**Figure 4:** To build a GIF animation, the desired files are dragged from the Finder directly into this Frames window in GifBuilder. If the frames are not in the correct order, they may be dragged to the appropriate place within the series. The position column indicates that the frames had to be moved in order to align the images and produce a steady animation.

## Basic Steps for Morph

The first step in morphing between two images is loading the start and end images in the storyboard to generate the Morph sequence (Figure 1). Place each image side by side in the storyboard to set key points and key lines (Figure 2), which specify the portions of the images to be matched. In Figure 2, key points were placed along the borders of the skull and throughout the brain, focusing on the tumor area. The key points were then joined using key lines. Key points and key lines must be placed on both start and end images and this step is the most time-consuming portion of making a Morph movie. For the brain tumor movie (available for viewing at the WWW address above), 18 sequences were created using 18 individual images. After the 18 sequences were completed, the Export Movie command (Figure 3) was used to produce one continuous animation from the 18 individual morphing sequences. To view the Morph movie, choose Open from the File menu and select the QuickTime movie. However, when this QT movie was put onto a Macintosh web server, it could not be viewed by PC-based browsers. Therefore, the QT movie was saved as a MoviePlayer (standard Apple ap-



**Figure 6:** GifBuilder provides several options including interlacing, colors, depth, dithering, image size, background color, and looping.

plication) file that can be viewed by any browser.

## Basic Steps for GifBuilder

In GifBuilder, the images used to create the animation are called "frames". To begin, the appropriate frames are dragged from the Finder into the Frames window (Figure 4). Alternatively, the frames may be loaded by using the Add Frame command in the File menu. Any selected frame from the animation sequence can be viewed in the Preview window (Figure 5).

The documentation for GifBuilder includes suggested settings for each option. It is easier to begin with the suggested settings and make any necessary changes after viewing the animation (Figure 6). Once the frames are loaded and the options set, choose Run to view the animation.

## Image Manipulation

Making changes to the images is not particularly easy in Morph or GifBuilder. It is often necessary to reposition frames so that the images are centered and overlap correctly in the transformation. If the frames are not aligned properly, the final animation jumps around the screen during the animation. Also, do not underestimate the importance of resizing the images to create a smooth transition. PICT images can be cropped and resized using Morph by dragging a rectangle around the desired portion of an image. However, resizing and centering images is easier to perform with other software, such as Photoshop or ClarisDraw, before loading the images into Morph or GifBuilder.

## Comparison of Features & Abilities

While Morph is a very powerful program capable of performing complicated transformations, simple animations are quicker and easier to create using GifBuilder (Table 1). GifBuilder is ideal for creating step-by-step, flipbook animations using simple images from graphics

programs such as ClarisDraw. Morph is more appropriate for complex images such as photographs to produce smooth, movie-like transformations. A simple Morph transformation consisting of two images takes about five minutes to produce, whereas a GIF animation consisting of two frames can be done in just a minute or two.

## Documentation

GifBuilder's documentation consists of twelve pages of instructions on basic usage, options, effects, and frequently asked questions. Instructions and descriptions are concise and easy to follow, and the section on frequently asked questions is helpful for troubleshooting. The last section deals with GifBuilder's compatibility with various browsers and other programs such as Adobe Photoshop 3.0, Adobe Premiere 4.0, and Specular Infini-D 3.0.

Morph's user manual is an extensive guide that includes an overview, a tutorial, basic and advanced morphing techniques, special effects, and morphing tips. The tutorial is a quick and easy way to familiarize yourself with Morph's basic features. First time users should use the tutorial and skim through the basic morphing

Morph	GifBuilder
smooth transition between images (movie-like)	stepwise image shift (like a flipbook)
ability to handle very different input images	images in a sequence must be similar to achieve a fluid look
excellent for detailed images such as photos	best for simple images such as GIF drawings
equipped with tools for manipulating input images	not equipped with tools for manipulating input images
many tools, but still user-friendly	few tools and options, but easy to use

**Table 1:** A comparison of features and output animations for Morph and GifBuilder reveals that both programs have specific strengths and weaknesses.

techniques before attempting a transformation.

## Summary

Both Morph and GifBuilder are useful, user-friendly teaching tools that can be used to create a wide variety of output images. If you are planning to create some

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# Biological Animations

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animations and are deciding between Morph and GifBuilder, take into account the cost of the software, the quality of input images, and, most importantly, the desired output images. Even though Morph costs more, it is capable of smoother transformations that simulate time lapse movies. If you plan to make simple step-wise animations, GifBuilder is more appropriate. It is worth noting that the Morph QT movie sequence of the brain tumor is 17.9 MB and will take over a minute to load on a WWW browser, while the GIF animation of the same series of input images loads quickly due to its small size (160K). Also, GIF animations can be constructed to loop continuously as long as the browser is viewing that particular WWW site.

## Availability

Morph is available from:

Gryphon Software Corporation

7220 Trade Street

San Diego, CA 92121 USA

619-536-8815

<http://www.gryphonsw.com/>

<ftp://ftp.gryphonsw.com/>

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