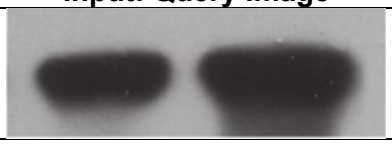
ImageTwin Task

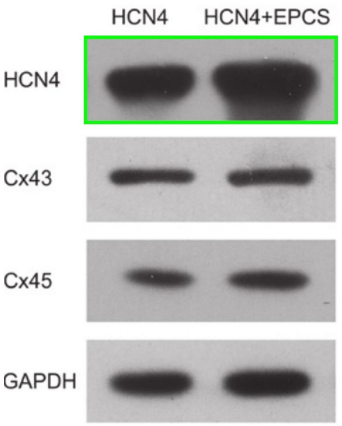
Your objective is to develop an application to find image duplication across query and source images. We prepared 103 source images and 18 query images. Each query image is duplicated within the source images. The source images are figures extracted from scientific publications.

Input/Output

The input to your program is a query image, and the output is the file name of the source image in which the duplication appears, including the coordinates of the duplicated area in [X, Y, WIDTH, HEIGHT] format. Here's an example:

Input: Query Image	Output: Filename and Coordinates
	99.png [X=110, Y=70, WIDTH=283, HEIGHT=94]

When we draw the coordinates [X=110, Y=70, WIDTH=283, HEIGHT=94] as a green bounding box into the source image *99.png*, we get the following result:

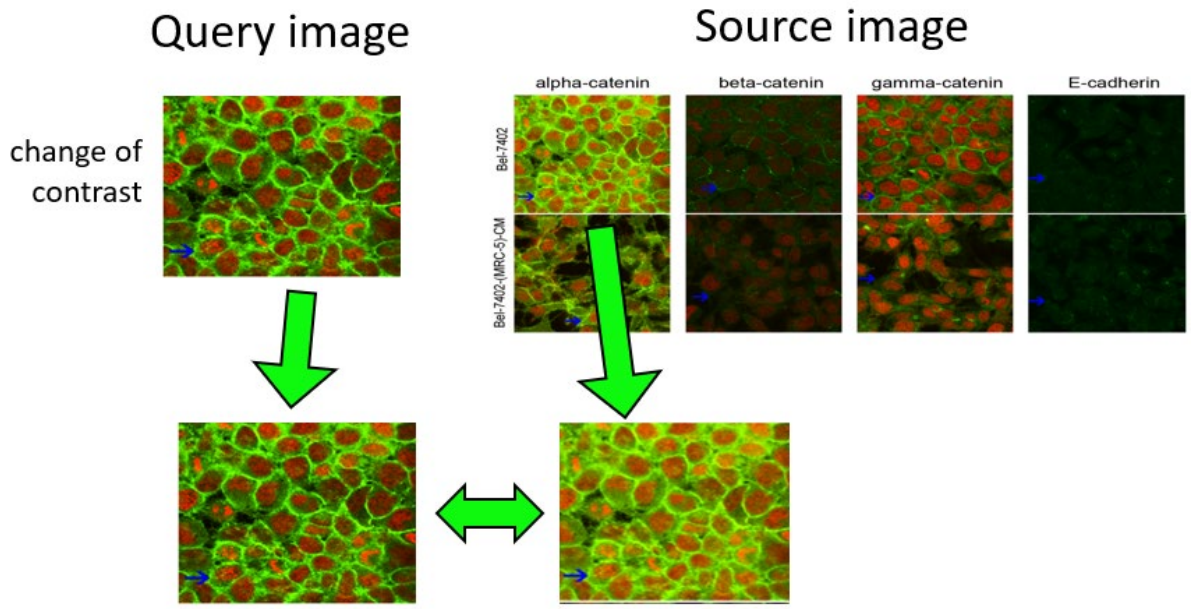


Notes

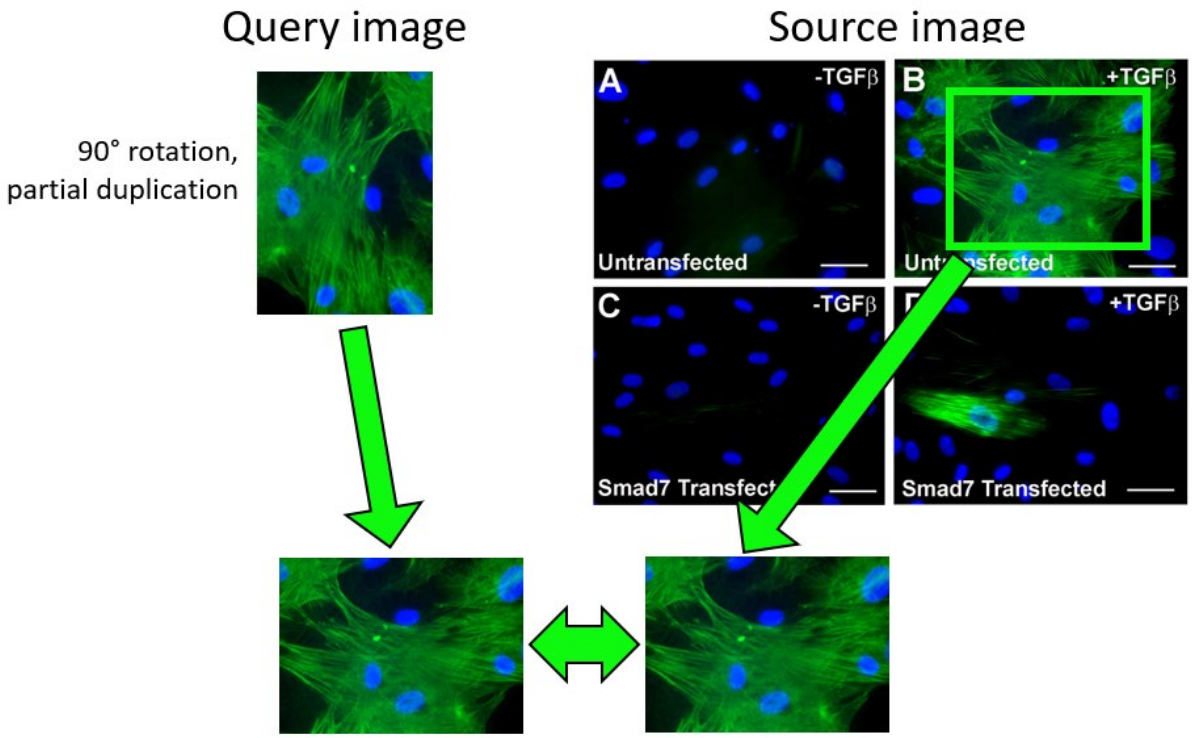
- Most source images are compositions of several sub-panels (sub-images). In some cases, the entire sub-panel is duplicated, as in *Example 1*. In other cases, only a partial area of a sub-panel is duplicated, as in *Example 2* and *Example 3*.
- To make things a little bit more challenging, we modified some query images. For example, we changed the contrast in *Example 1* or applied rotation in *Example 2*.
- As for implementation, feel free to use any programming language, library, etc.
- Don't worry if you cannot detect all duplicates. Some are more difficult to find than others.
- If you have any questions, don't hesitate to ask me at markus@imagetwin.ai

Good luck, and have fun ;-)

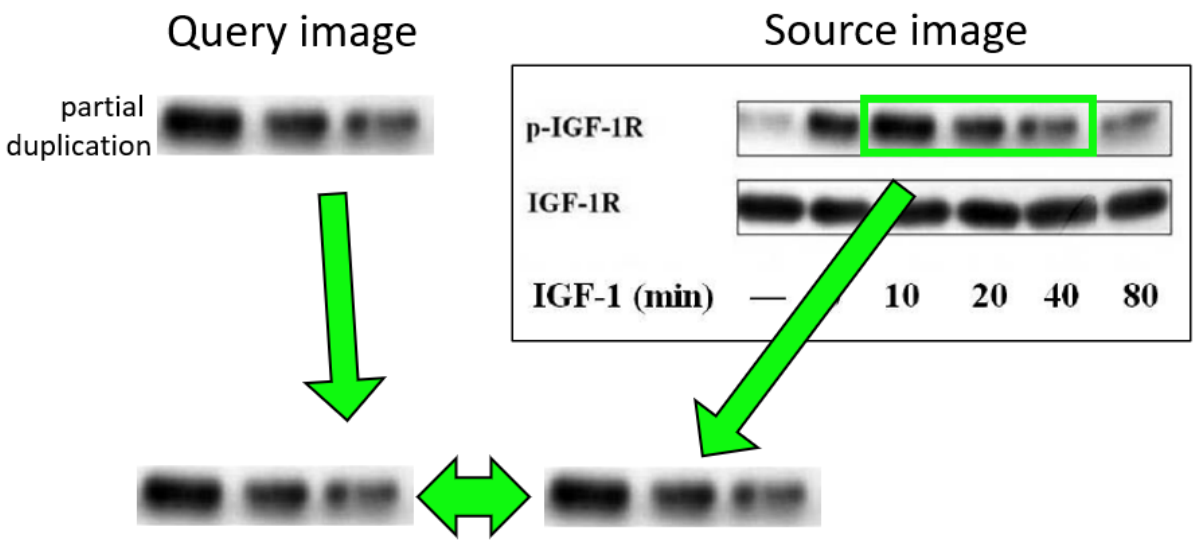
Example 1



Example 2



Example 3


Query image
Source image
partial duplication
p-IGF-1R
IGF-1R
IGF-1 (min)
—
10
20
40
80