

**How to deal with and screen
digital image during
publication process.**

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Competency after participants

- **What are the definition of resolution, raster image, and vector image?**
- **How to announce the preparation of image files in instructions to author section**
- **What is the available program to fix the image resolution?**
- **How to screen the falsified digital image**

Resolution, raster image, and vector image

- **For high-quality images for manuscript preparation**
- **Definition of resolution:**
- **a measurement of clarity or detail of the displayed image and is expressed as the number of pixels displayed per unit length**
- **dots per inch (dpi) or pixels per inch (ppi)**

Difference of resolution



Pixel image size: 1080X1440
pixel

printing size: **381x 508** mm,

Horizontal resolution **96** dpi

Vertical resolution 96 dpi

(ppi)

Bit level 24

Color: RGB

File size: 695.3kB

File type: JPEG

Pixel number: **1,555,200**



이미지 비율 조정

이미지 비율 조정
[제목없음]-2

이미지 크기

너비(W): 1080
높이(H): 1440
1080 x 1440 픽셀

X축 해상도(X): 300.000
Y축 해상도(Y): 300.000
픽셀/in

화질

보간(N): 큐빅

도움말(H) 원래대로(R) 크기 조정(S) 취소(C)

From 96 dpi to 300 dpi



Pixel image size: 1080X1440
pixel

printing size: **91x 121** mm

Horizontal resolution **300** dpi

Vertical resolution 300 dpi

(ppi)

Bit level 24

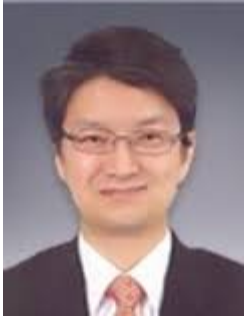
Color: RGB

File size: 733.2kB

File type: JPEG

Pixel number: **1,555,200**

Printing size



Pixel image size: 120X158 pixel
printing size: : **42x 55** mm
Horizontal resolution 72 dpi
Vertical resolution **72** dpi (ppi)
Color: RGB
File size: 2.3kB
File type: JPEG
Pixel number: **18,960**



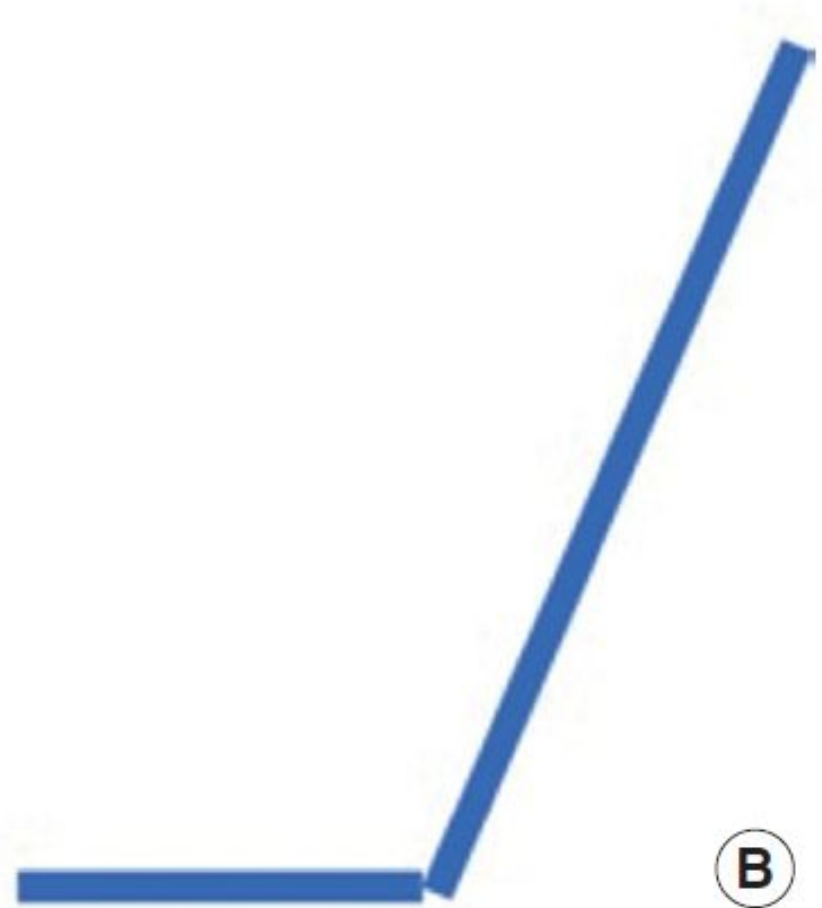
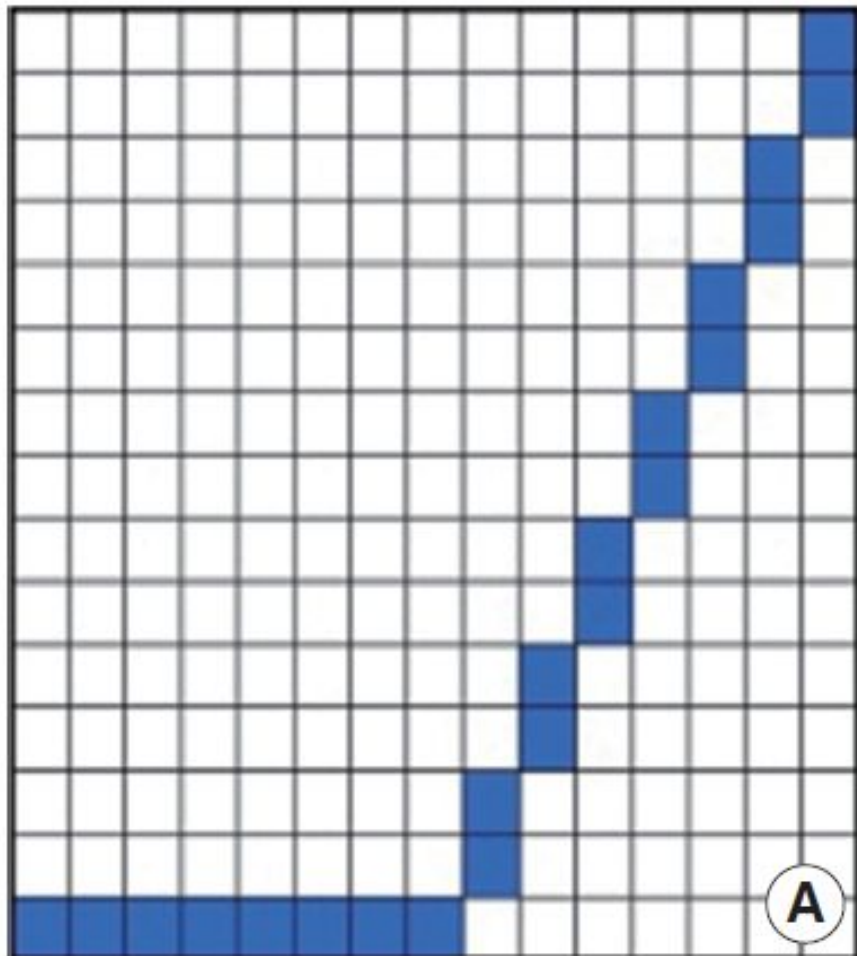
Pixel image size: 120X158 pixel
printing size **10 x 13** mm,
Horizontal resolution **300** dpi
Vertical resolution 300 dpi (ppi)
Color: RGB
File size: 2.3kB
File type: JPEG
Pixel number: **18,960**

Raster images

- are **resolution-dependent**,
- A raster image **is made up of pixels**
- **Graphic Interchange Format (GIF)**,
Joint Photographic Experts Group (JPEG),
Portable Network Graphic (PNG), and **Tagged Image File Format (TIFF)**

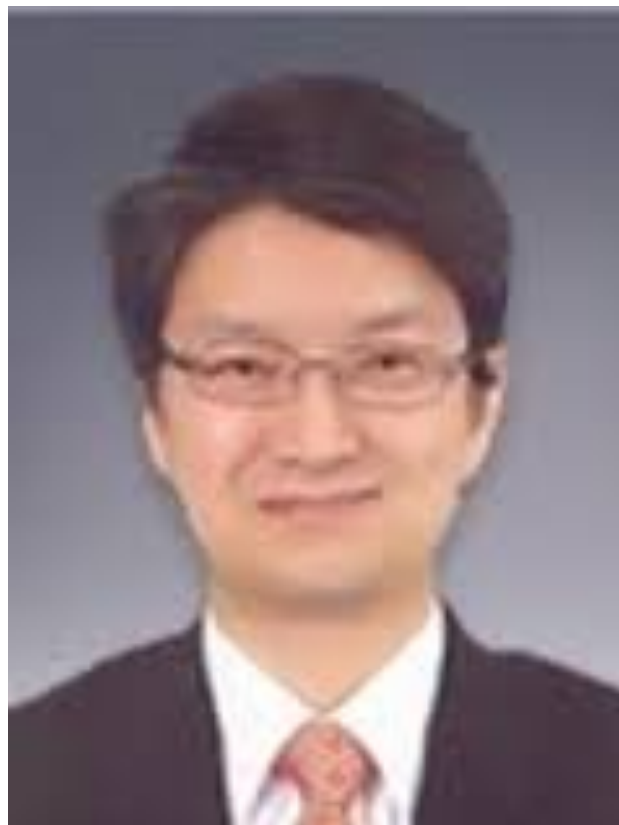
Vector image

- **A vector image is made up of paths**
- **Each of these points has a definite position on the x and y axes of the work plan.**
- **Encapsulated PostScript (EPS), Scalable Vector Graphics (SVG), and Adobe Illustrator (AI)**

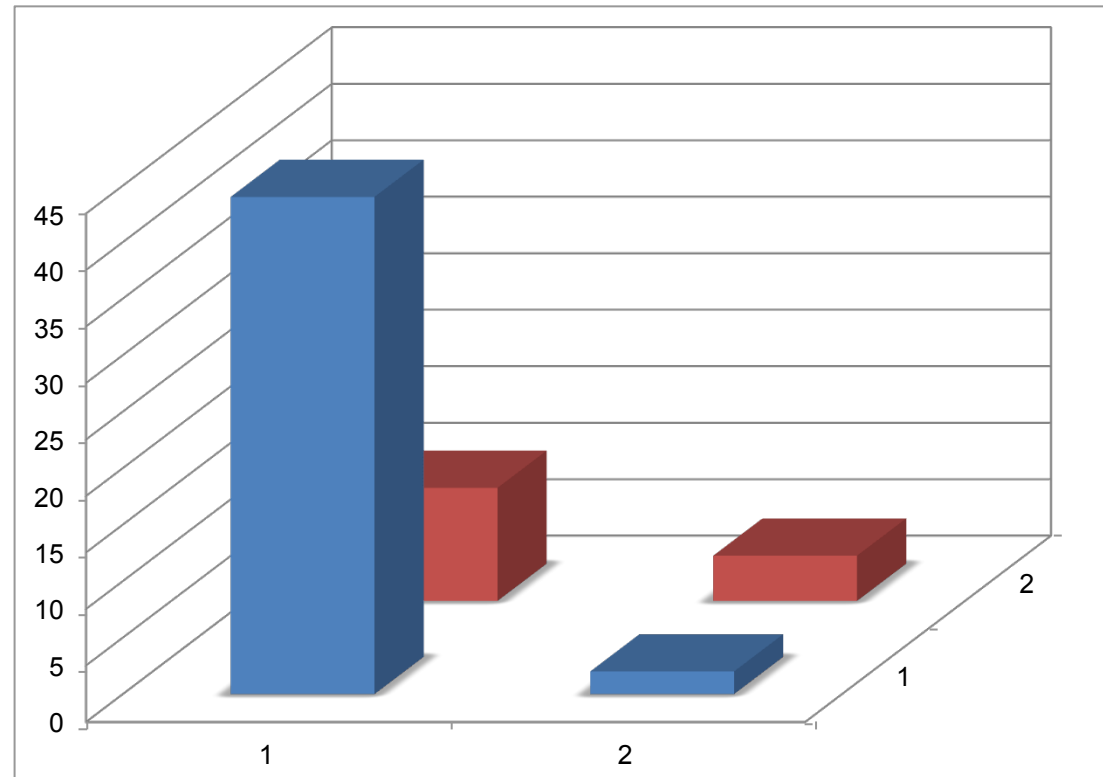
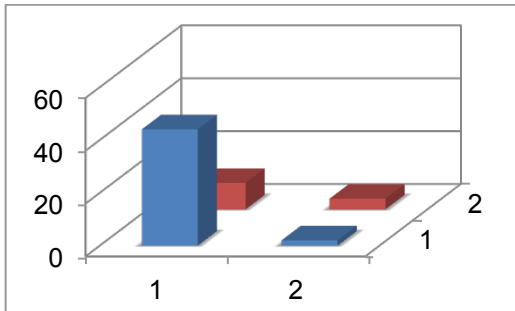


Two methods for producing an image of a line: (A) many dots are combined to comprise a raster image and (B) lines are used composing a vector image. From: Sci Ed 2014; 1(2): 58-61. <http://dx.doi.org/10.6087/kcse.2014.1.58>

Raster image: scaled up with loss of quality



Vector image: No quality change by size change



How to announce the preparation of image files (<http://jeehp.org/>)

- Acceptable figure file formats are **BMP**, **JPG**, **PSD**, **TIF**, **AI**, **EMF**, **EPS**, **WMF**, or **DOC**, **XLS**, **PPT**, and **PDF**.
- Other formats of figures are negotiable.
- Contrast density of figure file should be at least **600 dpi** with a size of **82 mm** or **164 mm**. The drawings and pictures are recommended to be in full color

[http://www.biochemia-medica.com/
content/instructions-authors](http://www.biochemia-medica.com/content/instructions-authors)

- ✓ **Technical editors will redesign or recreate all graphical elements (pictures, schematic presentations etc.) of the manuscript if they do not conform to the uniform style of the Journal.**

Recommendation at a glance (PLOS ONE)

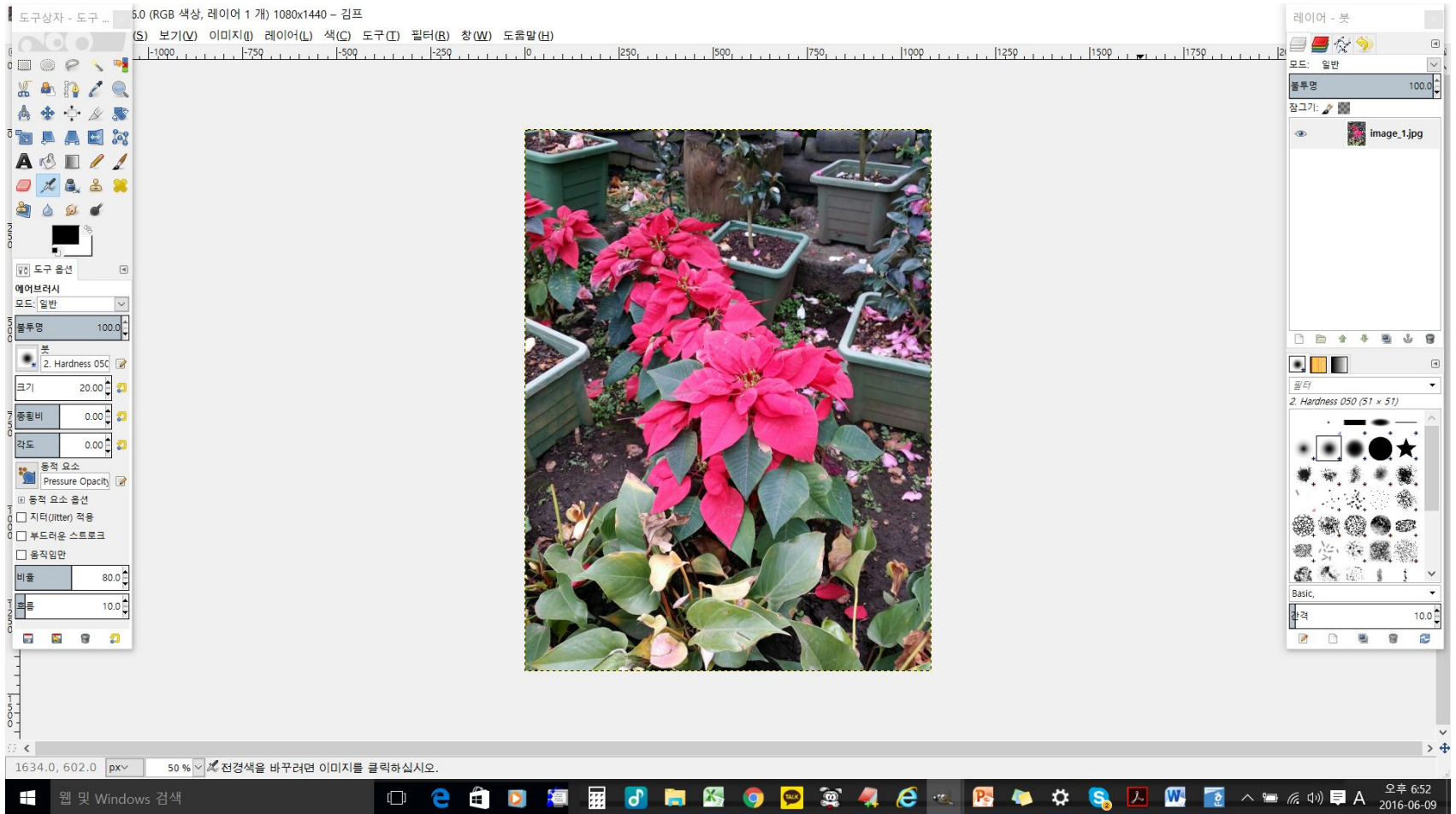
All figures	
File format	TIFF or EPS
File size	Under 10 MB
Orientation	Submit figure rotated to orientation meant for publication
Dimensions	Maximum: 7.5 in (19.05 cm) W x 8.75 in (22.23 cm) H Minimum: 2.63 in (6.68 cm) W
White space	Crop out excess white space from around image content
Color mode	RGB (8 bit/channel) or grayscale only
Text within figures	Arial, Times, or Symbol font in 8-12 point
Lines/rules/strokes	Minimum 0.5 point
Multi-panel figures	Figure file must contain all parts in one image

TIFF	
Resolution	300-600 ppi
Layers	Flattened, no layers
Alpha channels	No alpha channels
Compression	LZW required
Background color	White, not transparent
EPS	
Text within figures	Must be converted to outlines

File format

PLOS accepts TIFF or EPS files only. To ensure consistent quality and a smooth production workflow, our systems restrict figure file type to TIFF and EPS. Read about [converting different file formats to TIFF or EPS](#)

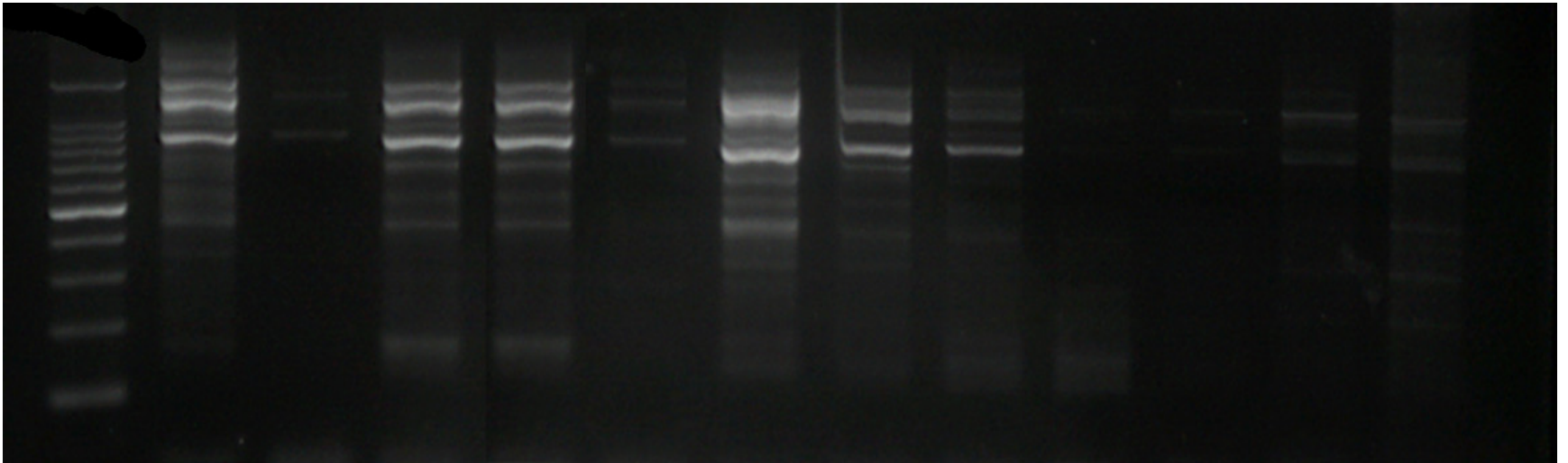
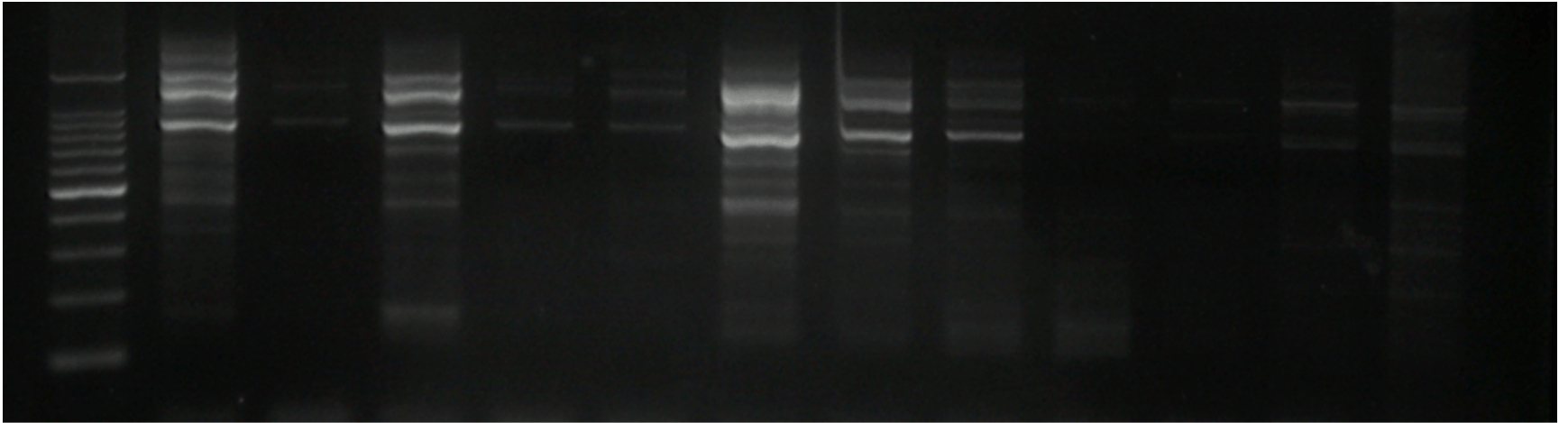
GIMP- image manipulation for raster image files <https://www.gimp.org/>



How to screen the falsified digital image

- ✓ Not easy if there is no professional image screener.
- ✓ Image manipulation:
 - ✓ copy and paste,
 - ✓ re-touching,
 - ✓ splicing,
 - ✓ whole transformation

Duplicated pannel



Ethical guideline for image

- **Avoiding Twisted Pixels: Ethical Guidelines for the Appropriate Use and Manipulation of Scientific Digital Images**
- **Sci Eng Ethics. 2010 Dec; 16(4): 639–667.**
- **doi: 10.1007/s11948-010-9201-y**

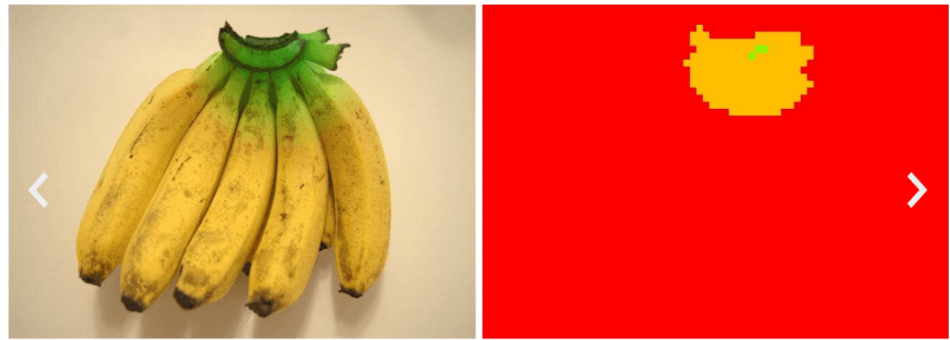
Forensic tools

- <http://forensic.kaist.ac.kr/>
- <http://ori.hhs.gov/forensic-tools>
- Forensic Actions (Photoshop[®] v. CS2-CS3)
- Advanced Forensic Actions (Photoshop[®] v. CS4-CS5)

Image Forensic Tool

파일 선택 선택된 파일 없음 submit

1. Select your file to upload
 2. Push the submit button
- It takes up to several minutes.
 - You can upload [jpg], [bmp], [tif], [tiff], [png] files.
 - Filename must be written in English.



Color modified image and detection region

ORI Advanced forensic action *add-in* program to photoshop

ori.hhs.gov/advanced-forensic-actions

U.S. Department of Health & Human Services www.hhs.gov

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Advanced Forensic Actions

ORI's Advanced Forensic Image Tools Actions (and Droplets) for Adobe Photoshop® v CS4-CS5

This set of ORI's Forensic Tools has been designed for use with Photoshop® v. CS4-CS5. Like the earlier versions, these Actions are designed primarily for visualizations of intrinsic irregularities within images, and they also can be used to facilitate comparing two images by direct overlay. The Actions are specifically targeted to the detailed forensic examinations of single images, but they can also be used in an automated scheme to survey groups of images by converting the Actions to Droplets for batch processing.

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CS4-5-set-up-....zip 다운로드 항목 모두 표시

웹 및 Windows 검색 11:47 2016-06-09

Conclusion

definition

- 1) resolution
- 2) raster image
- 3) vector image

Answer

- a) made up of path
- b) Pixel per unit size
- c) made up of pixels

Conclusion

✓ Preparation of image files in instructions to author

file format, resolution, picture size

✓ Program to fix the image resolution?

Photoshop, Gimp, et al.

✓ How to screen?

forensic.kaist.ac.kr/,

Advanced Forensic Actions