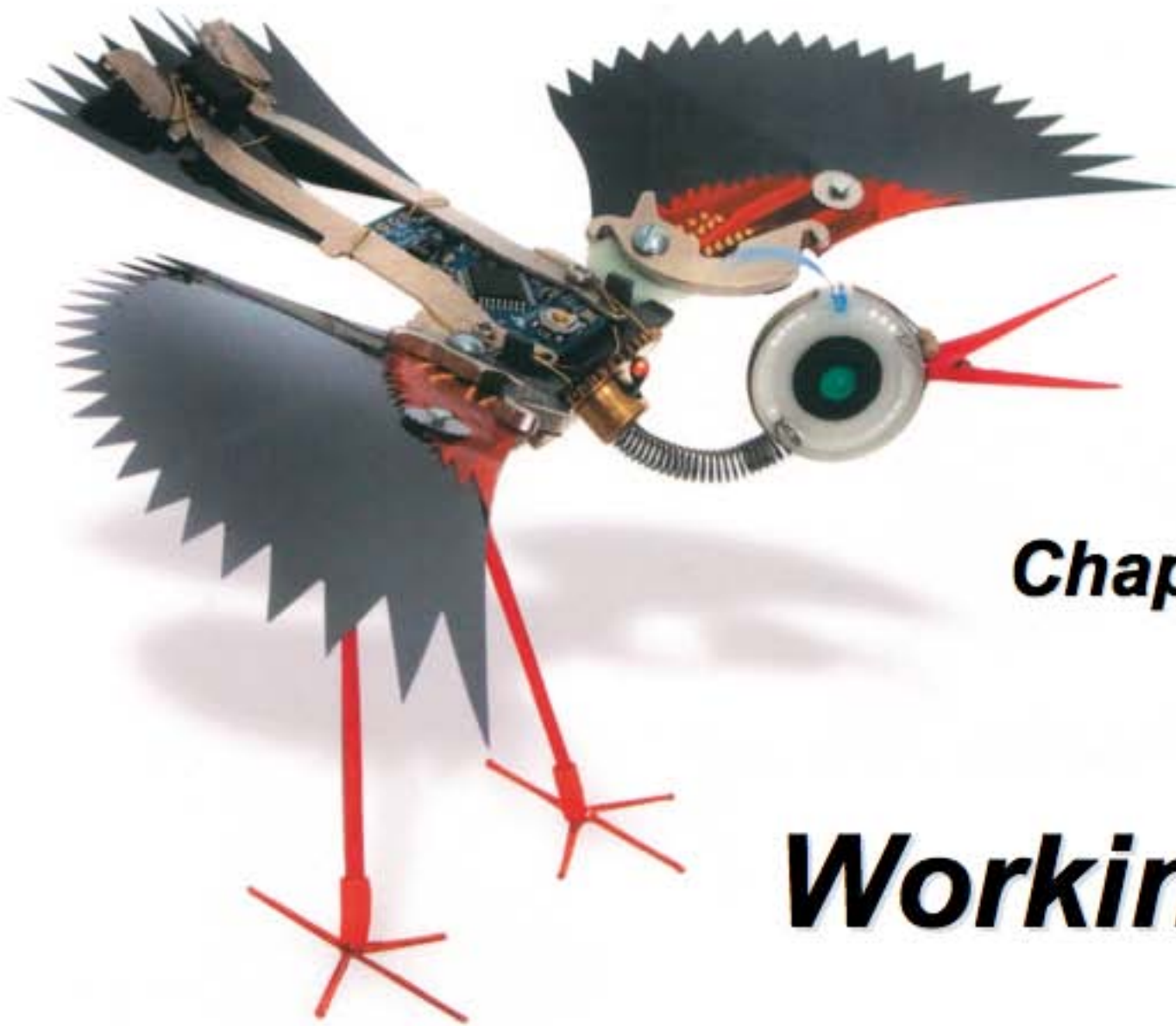




# Chapter 18

## ***Working with vector Art***

practical  
computing  
for  
**biologists**

HADDOCK • DUNN

***Lydia Danglot***  
*20th of April*



## Chapter **18**



# ***Working with Vector Art***

### **Creation of vector art with Adobe Illustrator**

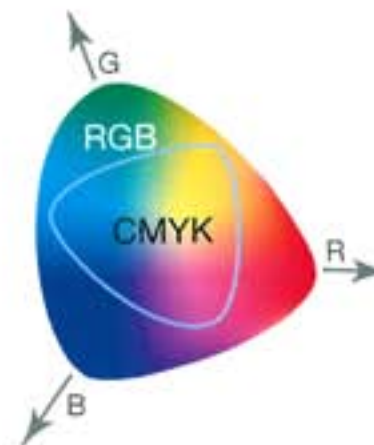
- ***Importing graphics and illustration in Illustrator***
- ***Drawing a shema directly in Illustrator***
- ***Converting a photo or a scan in a editable schema***

### **Anatomy of vector Art**

- ***How to use Bézier curves***
- ***Selecting and manipulating objects***
- ***Transparancy and layers***
- ***Illustrator tips and shortcuts***

### **InDesign: how to design scientific figures and books**

- ***Why using Indesign for generating your PhD memory***
- ***Creating figures with picture, graphics and photos***







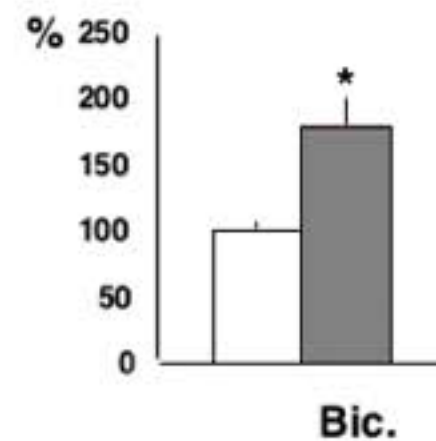
## General Image Types



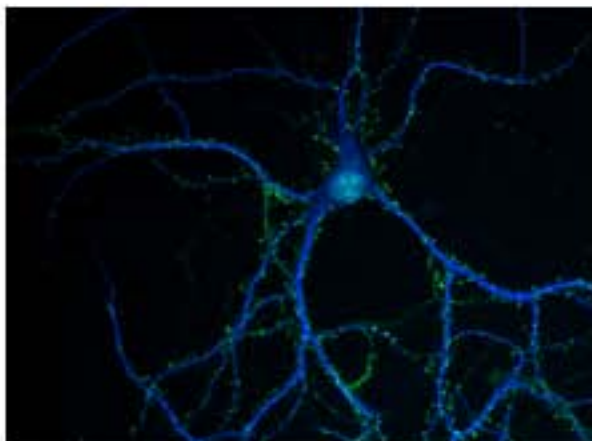
- **Vector-based image :**



Made of **editable lines, curves, and shape** which are defined by a few key properties.



- **Pixel-based image = bitmap = raster art :**



Made of **uniform grid or colored dots**, named **the pixels**.

Photos are typical pixel-based images.



## General Image Types



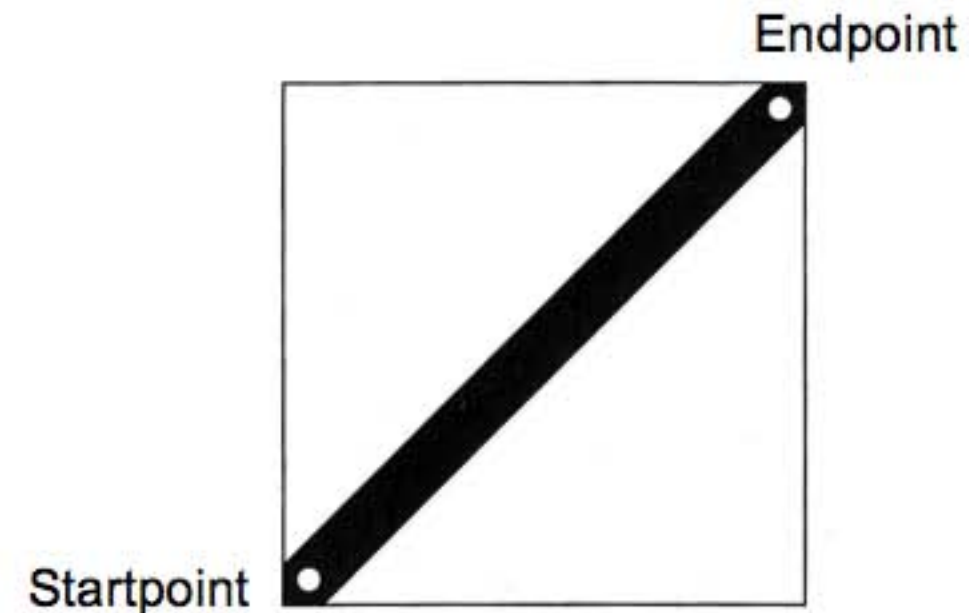
### • Vector-based image :



In **vector art** the line is defined by **2 points**.

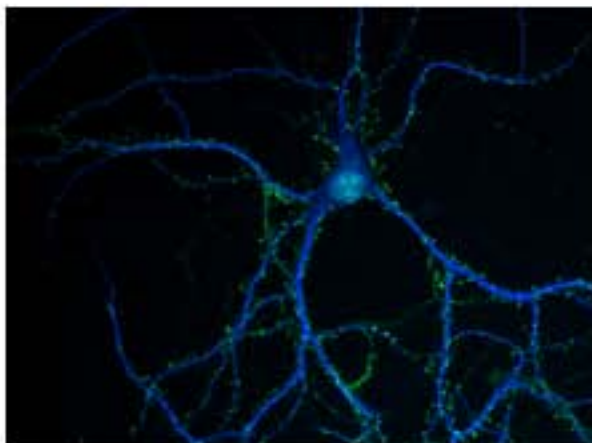
Storing info:

- X and Y of each point
- color of line, width



A 2 point vector line

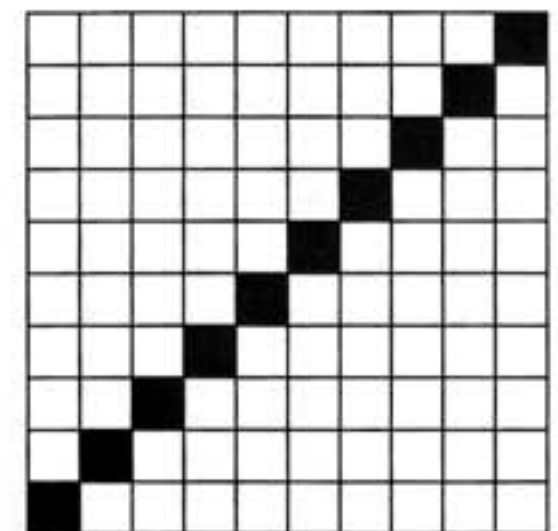
### • Pixel-based image = bitmap = raster art :



In **pixel art** the line consists of **many points** of a particular color.

Storing info:

- color of each point of the grid
- size of the image 10x10 or 100x100 ?
- this values increase with size



A 100-pixel (10x10) line





## General Image Types



### • Vector-based image :



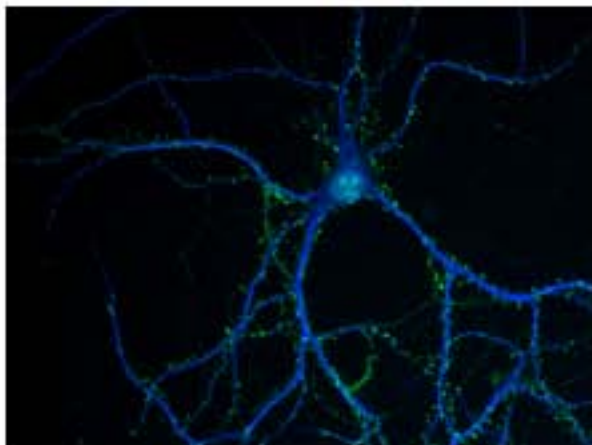
In **vector art** the file format can be :

- pdf : portable document format (Adobe)
- eps : encapsulated post-cript format (Adobe)
- svg : scalable vector graphics (XML)
- Ai: Adobe Illustrator



Vector art format

### • Pixel-based image = **bitmap** = **raster art** :



In **pixel art** the file format can be :

- JPEG : Joint Photographic Expert Group (compressed)
- PNG : Portable Network Graphic (screen capture)
- TIFF : Tag Image File Format
- BMP: Bitmap (Microsoft, IBM)
- PSD : Adobe Photoshop



Pixel art format





## General Image Types



### • Vector-based image :



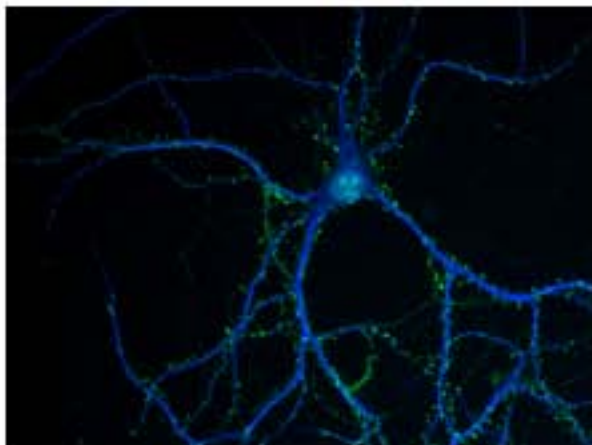
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Vector art format

### • Pixel-based image = **bitmap** = **raster art** :



In **pixel art** the file format can be :

- JPEG : Joint Photographic Expert Group (compressed)
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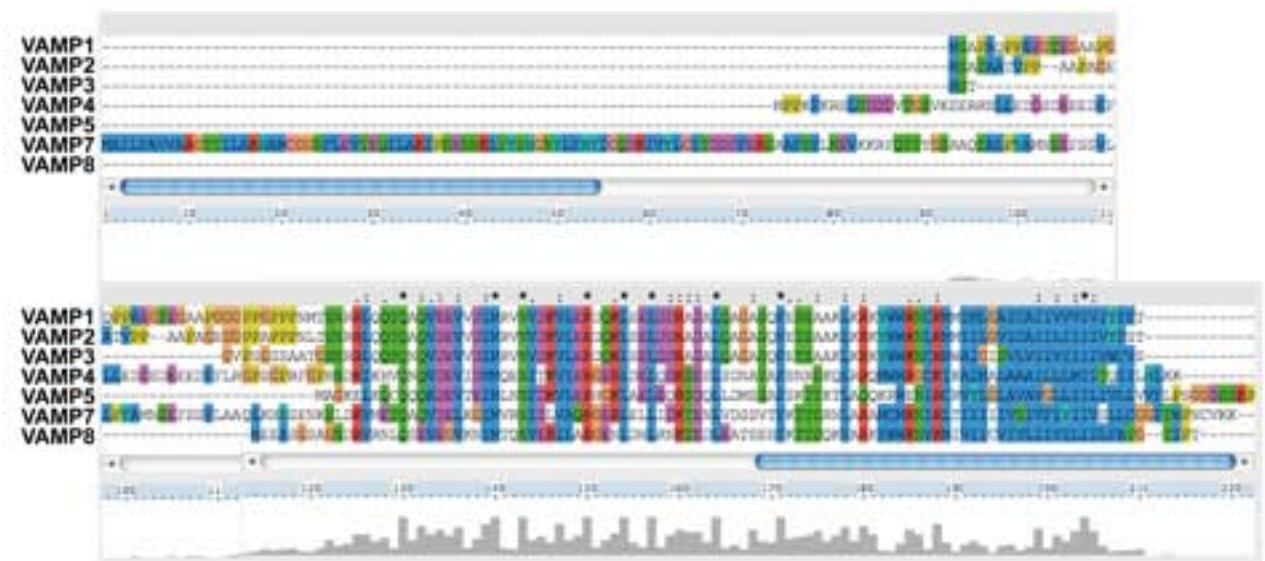
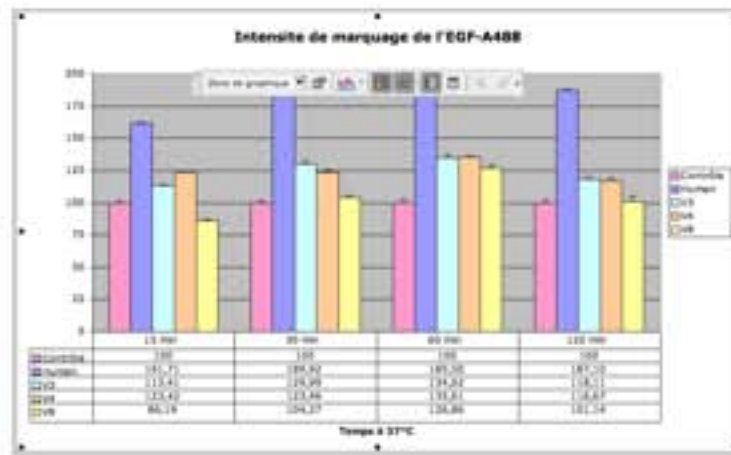
Pixel art format



## Generating vector art

There are 3 common ways to create vector art :

- Export a graph or a phylogeny tree from another program (Excel, Clustall, ...)



- Draw an image
- Trace an existing piece of pixel art





# Exporting graph from excel

Excel Fichier Edition Affichage Insertion Format Outils Graphique Fenêtre Aide

Verdana 10 Zone de graphique

060606-Facs analyse.xls

### Intensite de marquage de l'EGF-

|          | 15 min | 30 min | 60 min |
|----------|--------|--------|--------|
| Contrôle | 100    | 100    | 100    |
| Human    | 161,71 | 189,92 | 185,50 |
| V3       | 113,41 | 129,99 | 134,62 |
| V4       | 123,42 | 123,46 | 135,61 |
| V8       | 86,19  | 104,27 | 126,86 |

Temps à 37°C

Imprimer

Imprimante : Konica C360PS 172.25.0.39

Préréglages : Konica recto verso-2 par pages

Copies et pages

Copies : 1 ☒ Assemblées

Pages : ☒ Toutes (1 page)

De : 1 à : 1

Imprimer : ☐ Sélection ☒ Feuilles sélectionnées ☐ Classeur entier

Échelle : ☐ Adapter à 1 page(s) sur 1 page(s)

☒ Afficher l'aperçu rapide

Mise en page...

PDF Aperçu

Enregistrer au format PDF...  
Enregistrer au format PostScript...  
Faxer le document PDF...

Envoyer le document PDF par courrier électronique  
Save as Adobe PDF  
Enregistrer en PDF-X  
Enregistrer le document PDF vers iPhoto  
Enregistrer le document PDF dans le dossier de reçus Web  
Enregistrer le PDF dans Papers

Modifier le menu...

Annuler Imprimer





# Importing graph from excel

Illustrator Fichier Edition Objet Texte Sélection Effet Affichage Fenêtre Aide

Aucune sélection

Sans titre - 1 @ 8

Configuration du document Préférences

060606-Facs analyse.pdf @ 100% (RVB/Aperçu)

Intensité de marquage de l'EGF-A488

15 min 30 min 60 min 120 min

100 100 100 100

181,71 189,92 185,50 187,10

113,41 129,99 134,62 116,11

123,42 123,46 125,61 116,67

86,19 104,27 120,84

Temps à 37°C

Contrôle Humain V3 V6 V8

Importer...

Enregistrer pour Microsoft Office...

Exporter...

Scripts

Format de document...

Mode colorimétrique du document

Informations...

Imprimer...

Ouvrir

Chap18-VectorArt

Nom Date de modification

060606-Facs analyse.xls Aujourd'hui, 09:10

Chap18.ppt Aujourd'hui, 09:05

photoshop-16x16.png Aujourd'hui, 09:04

illustrator-16x16.png Aujourd'hui, 09:03

indesign-16x16.png Aujourd'hui, 09:03

Forme déjà vectoriser.ai Hier, 18:21

Forme à vectoriser.png Hier, 18:14

align.ps Hier, 18:04

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Alignement TIVAMP hom-souris-ra 1 août 2011 18:21

Activer : Tous les documents lisibles

Annuler Ouvrir



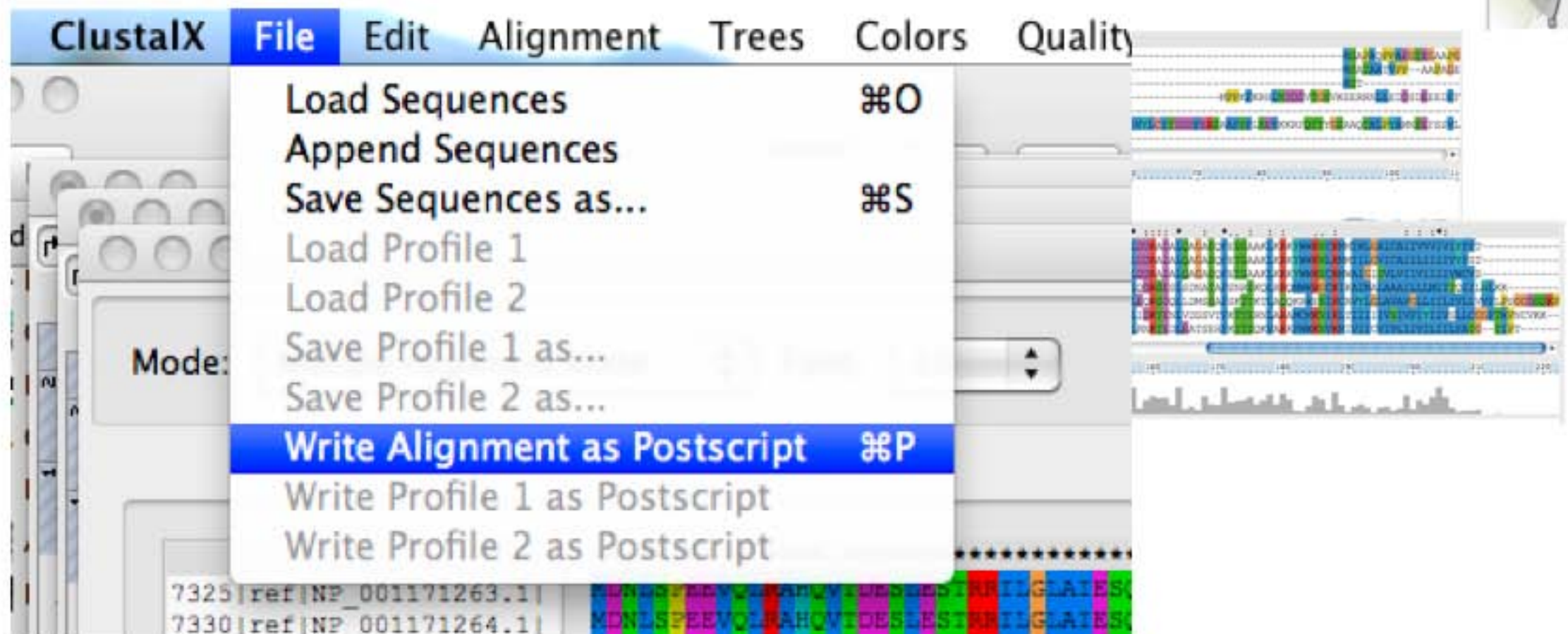
## Generating vector art (clustal)

There are 3 common ways to create vector art :

- Export a graph or a phylogeny tree from another program (Excel,



...)



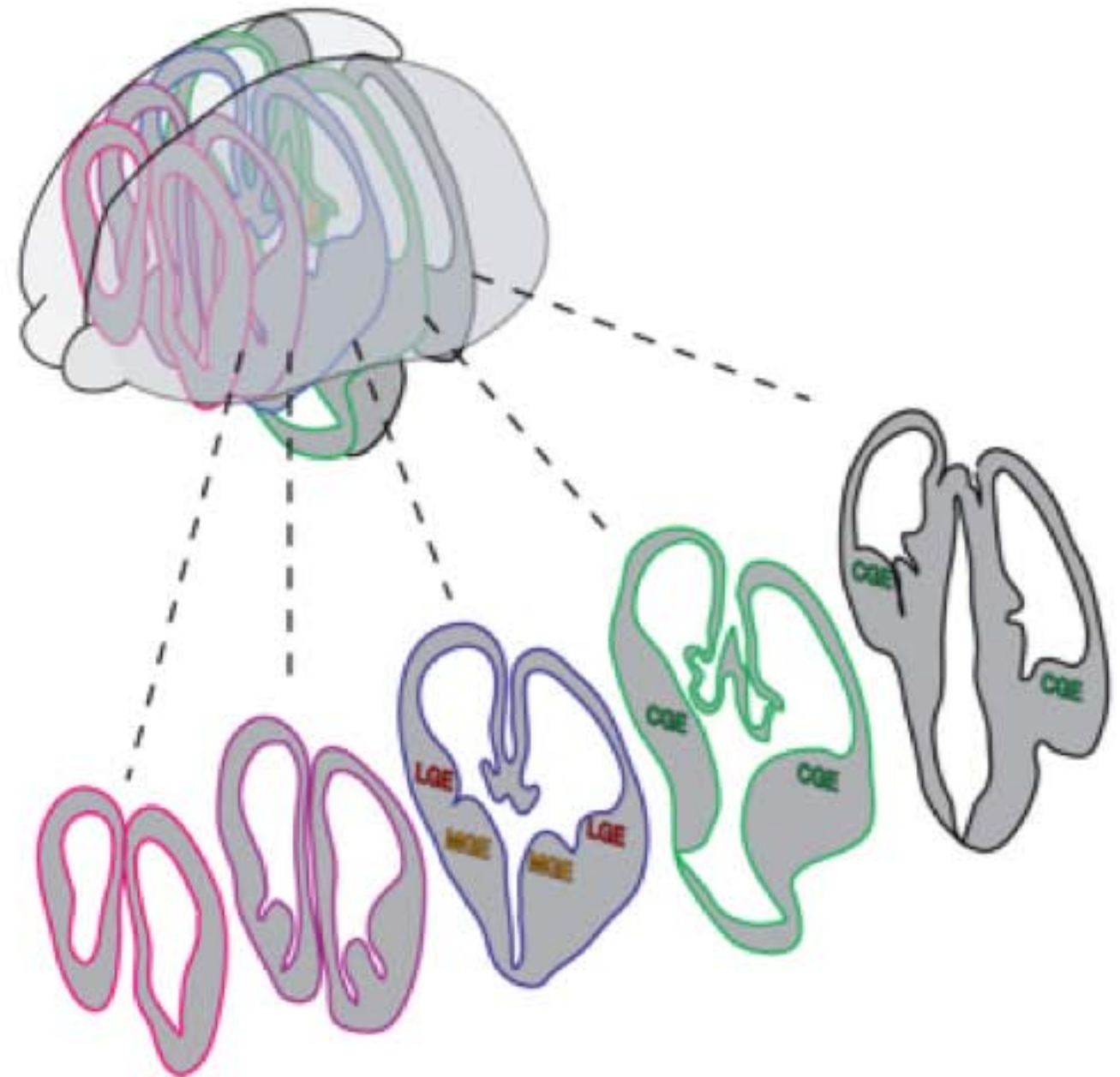




## Drawing in Illustrator

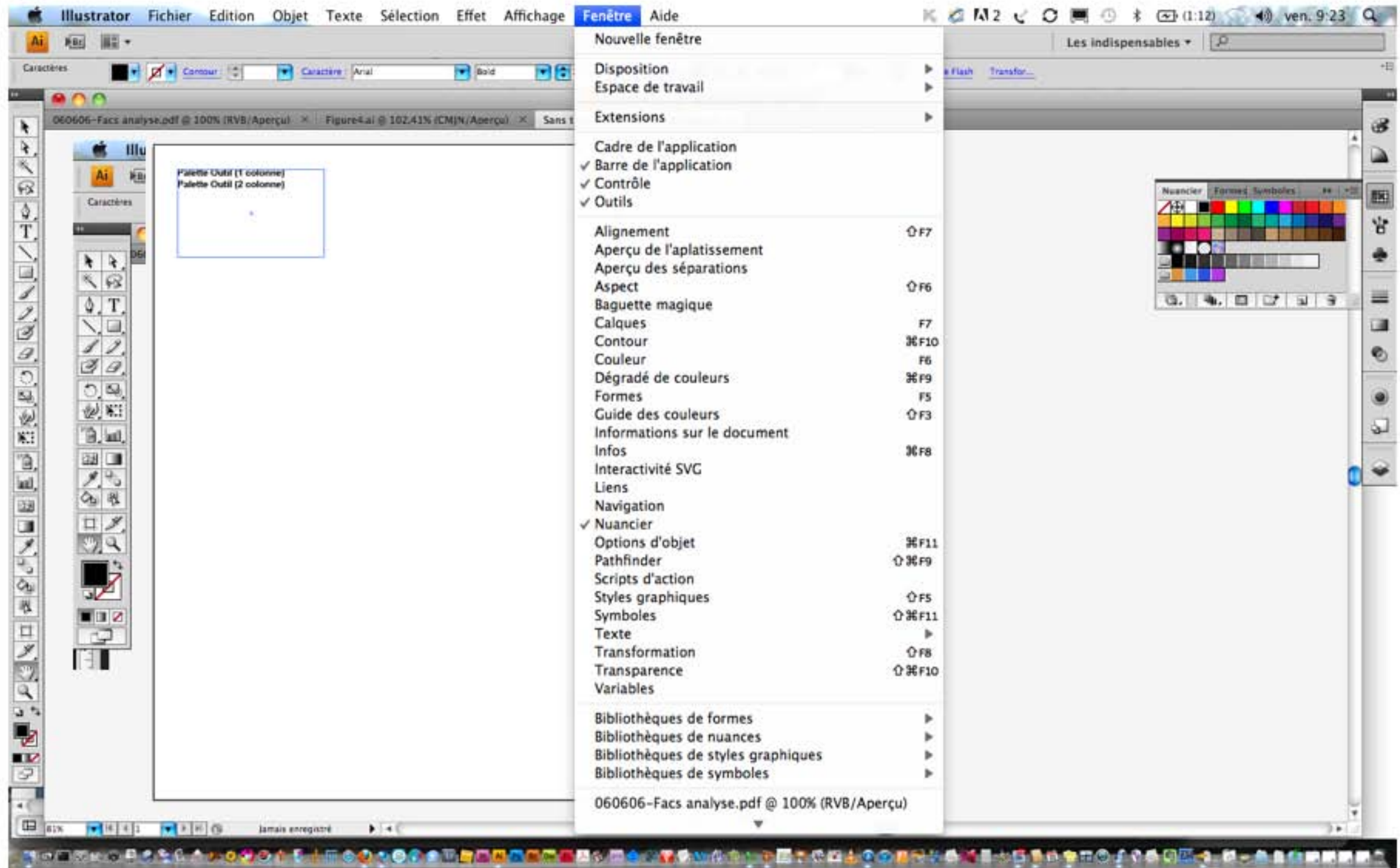


- From basics forms to complex shema :





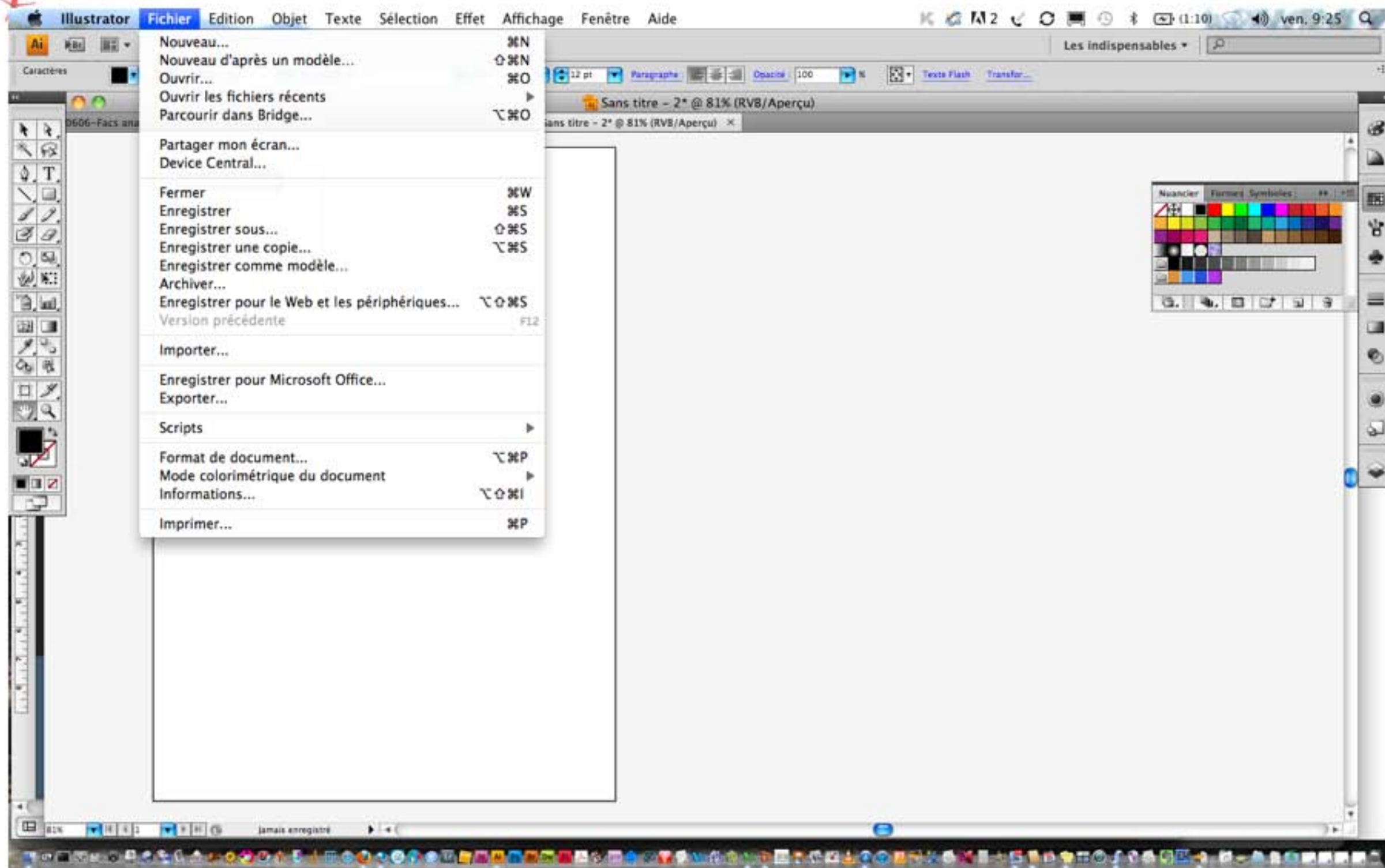
# Illustrator Panels





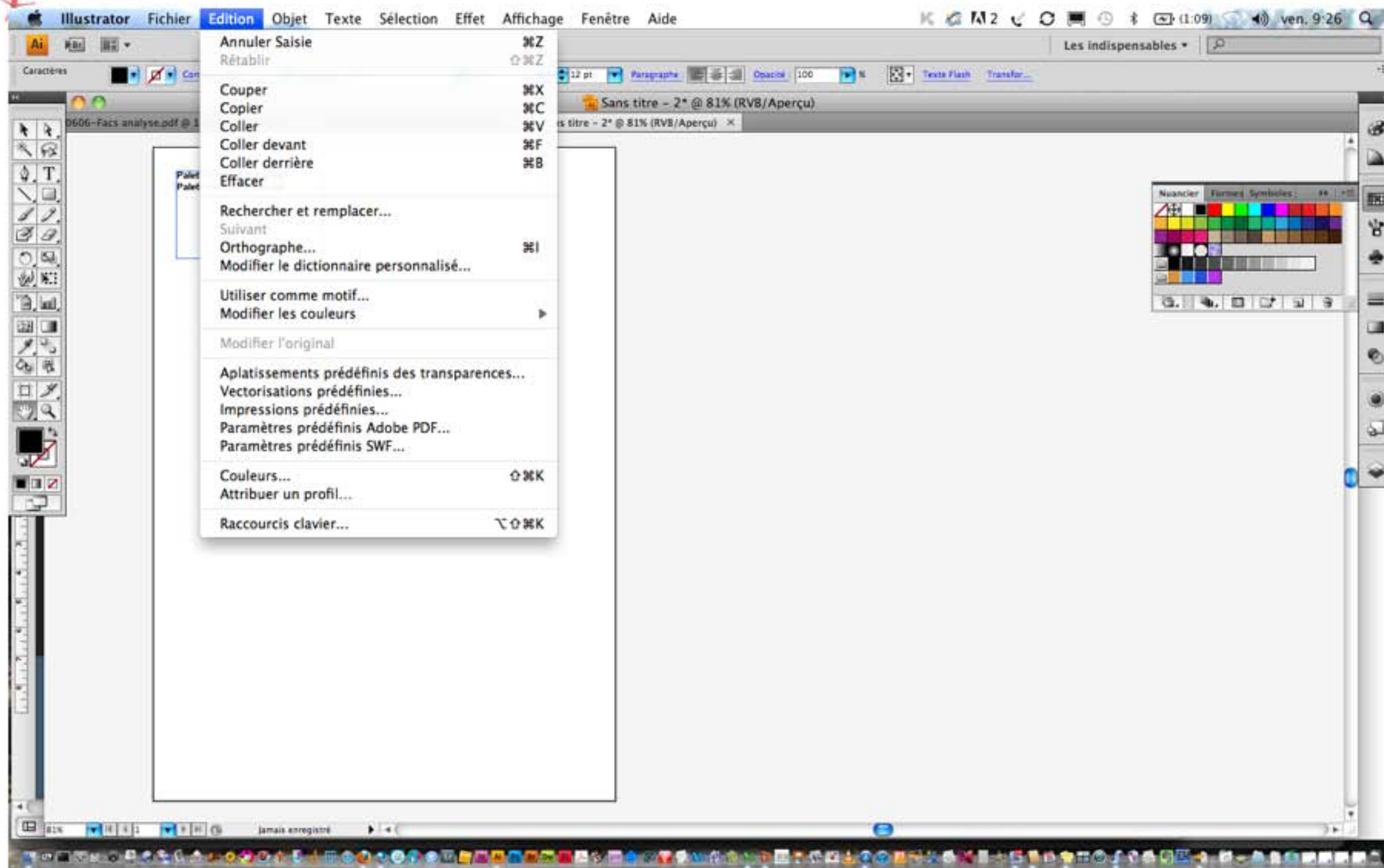


# Illustrator Panels





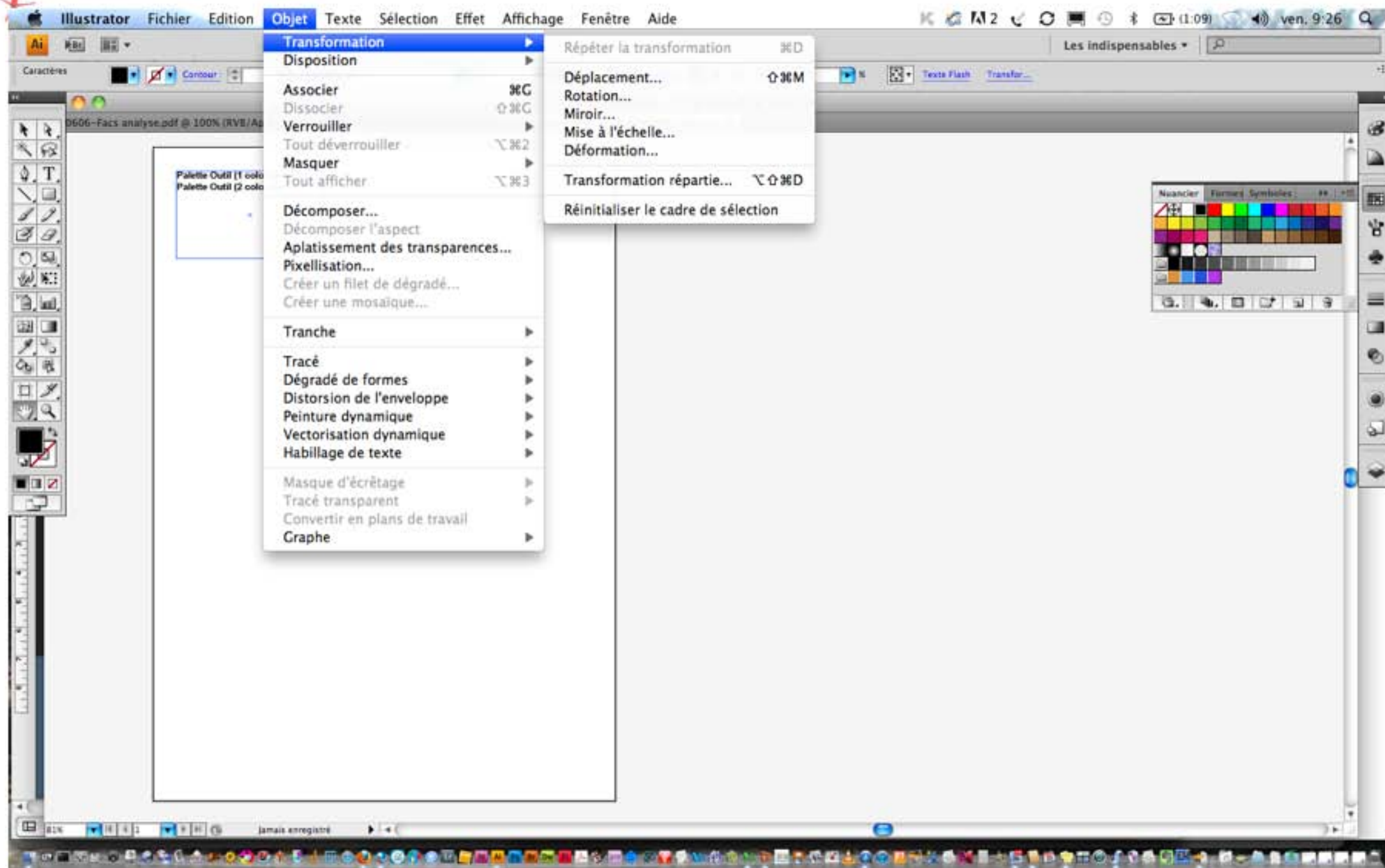
# Illustrator Panels





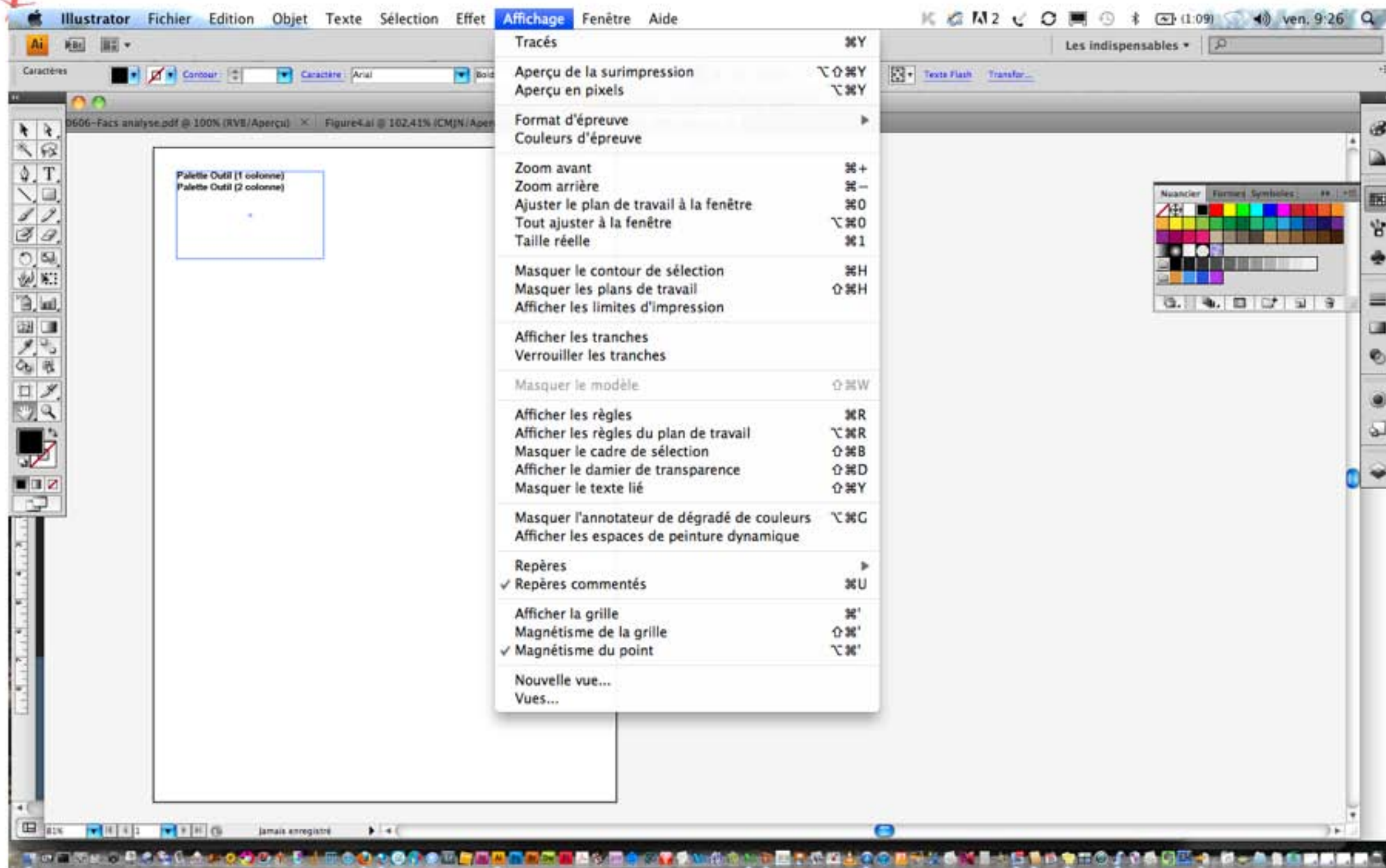


# Illustrator Panels





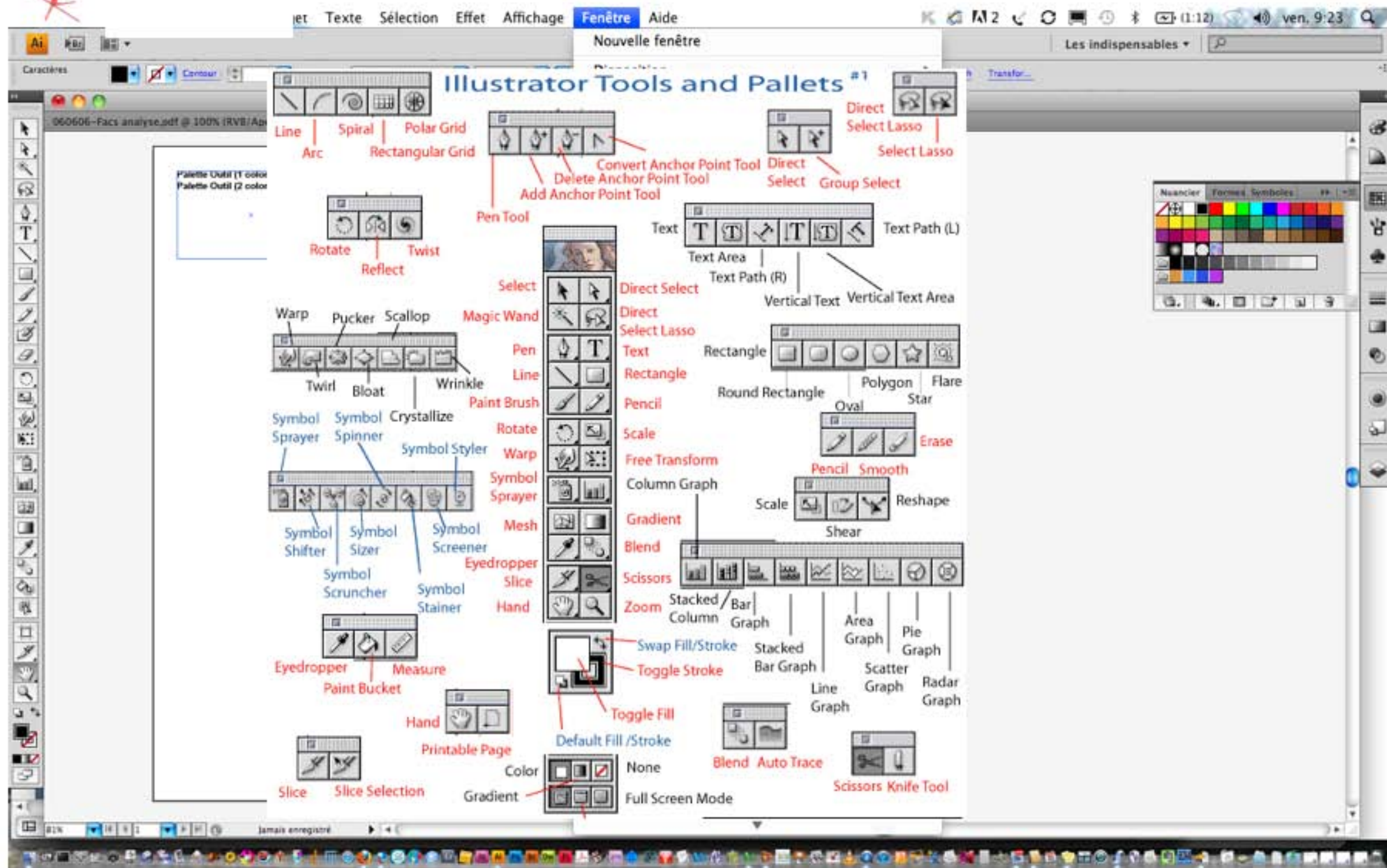
# Illustrator Panels







# Illustrator Tools

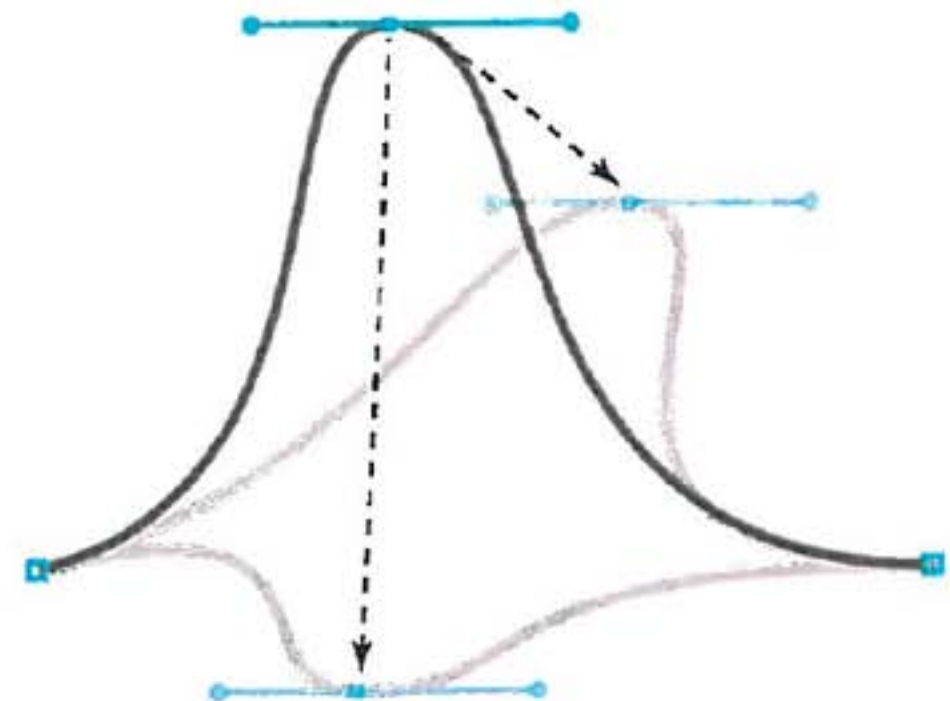
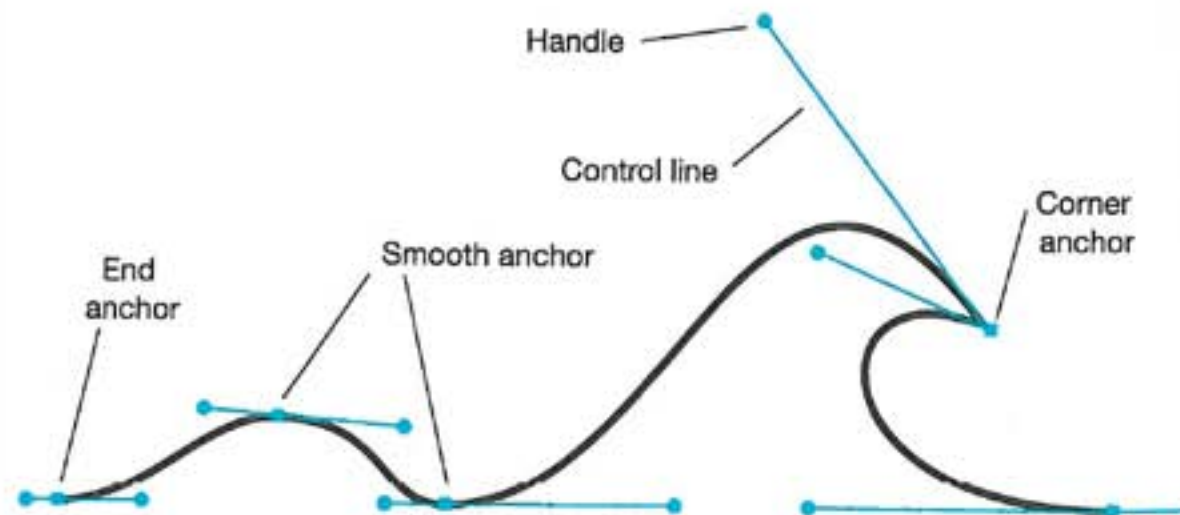




# Bezier curves



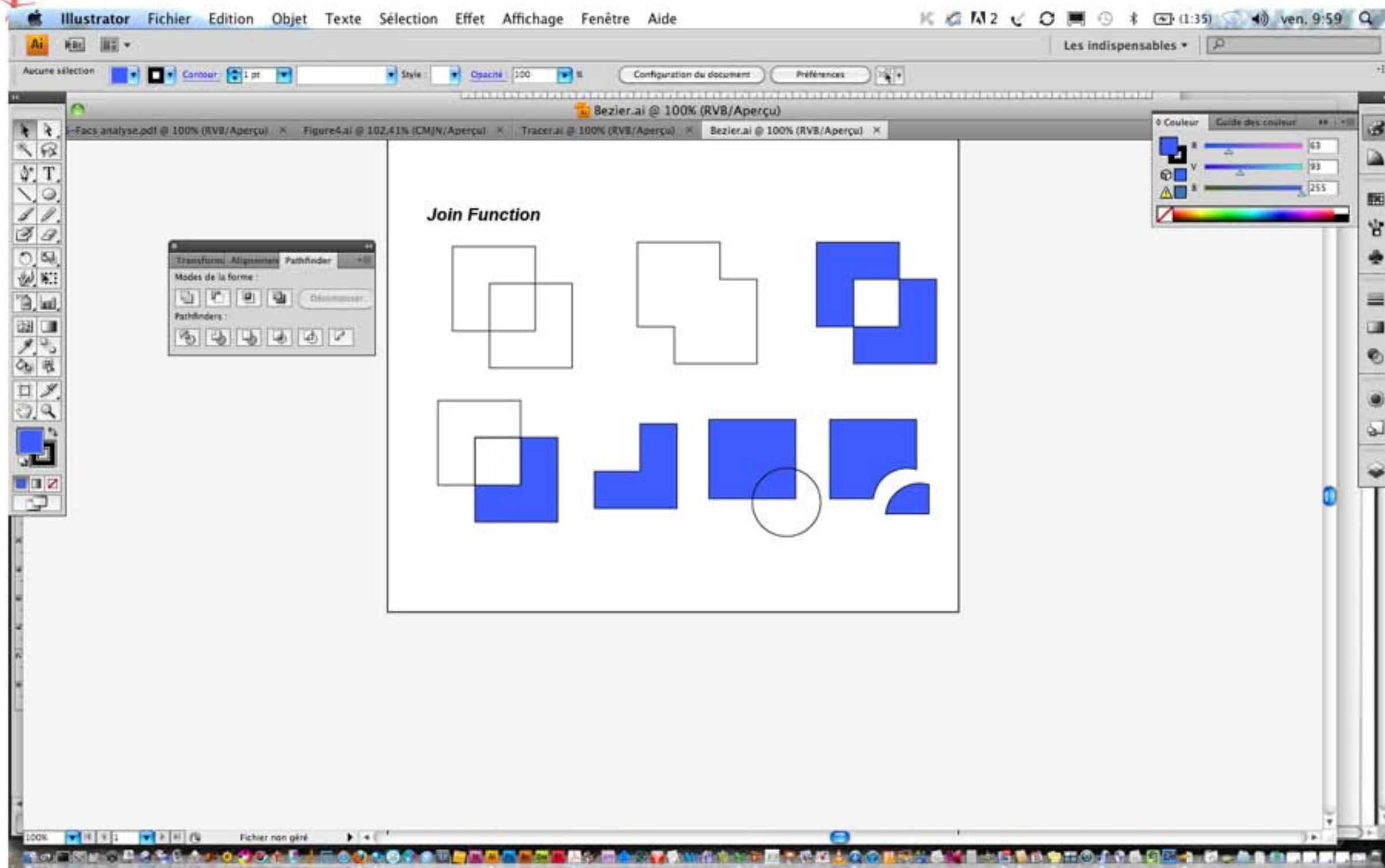
**FIGURE 18.3 Bézier curves** The three anchor points of these curves are all the same, but their control handles give them very different shapes: (A) smooth anchor; (B) corner point; (C) one handle retracted; (D) both handles retracted; (E) smooth anchor point, but with the control handles rotated 180° relative to (A).







# PathFinder

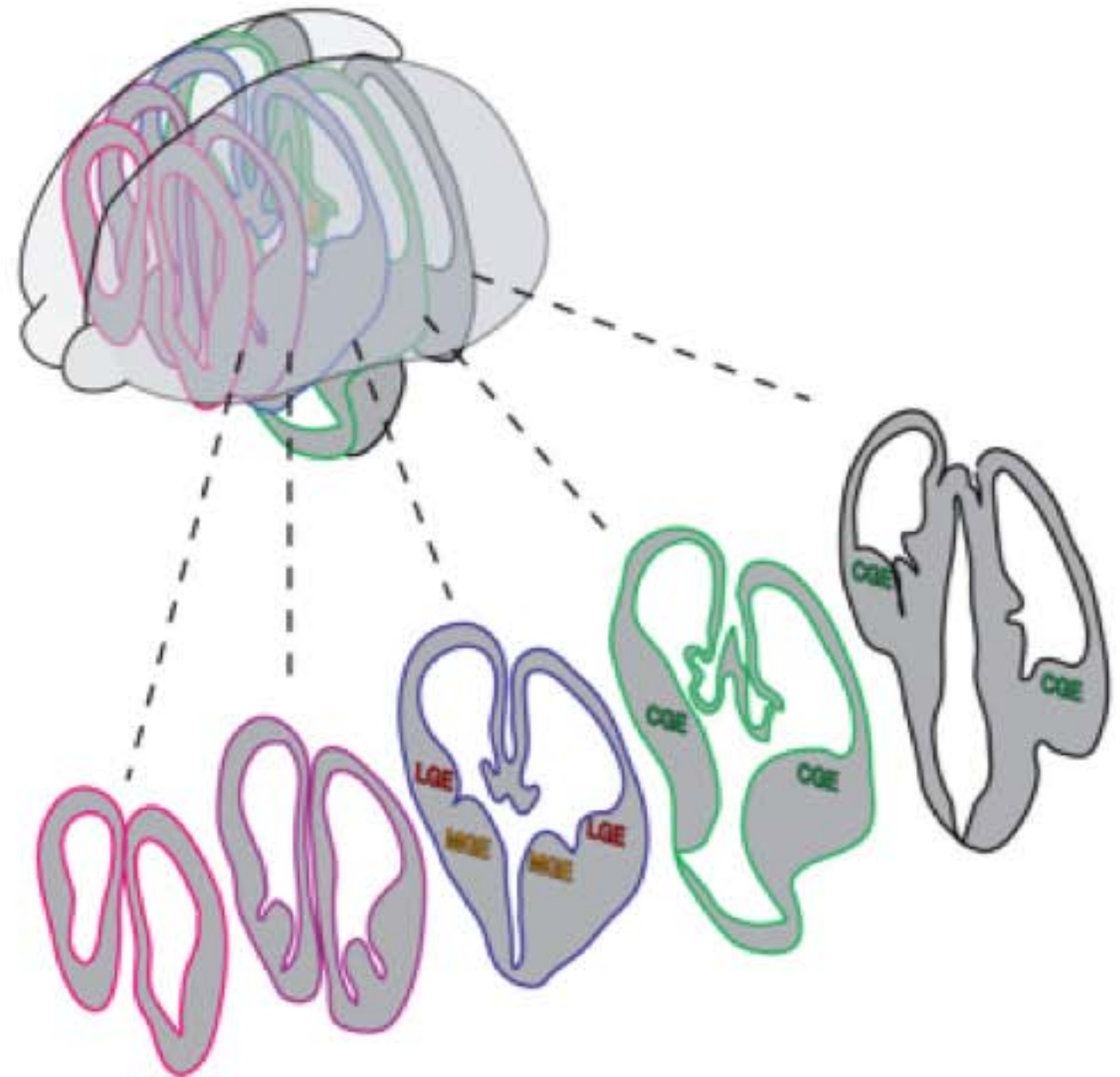




## Drawing in Illustrator



- From basics forms to complex shema :

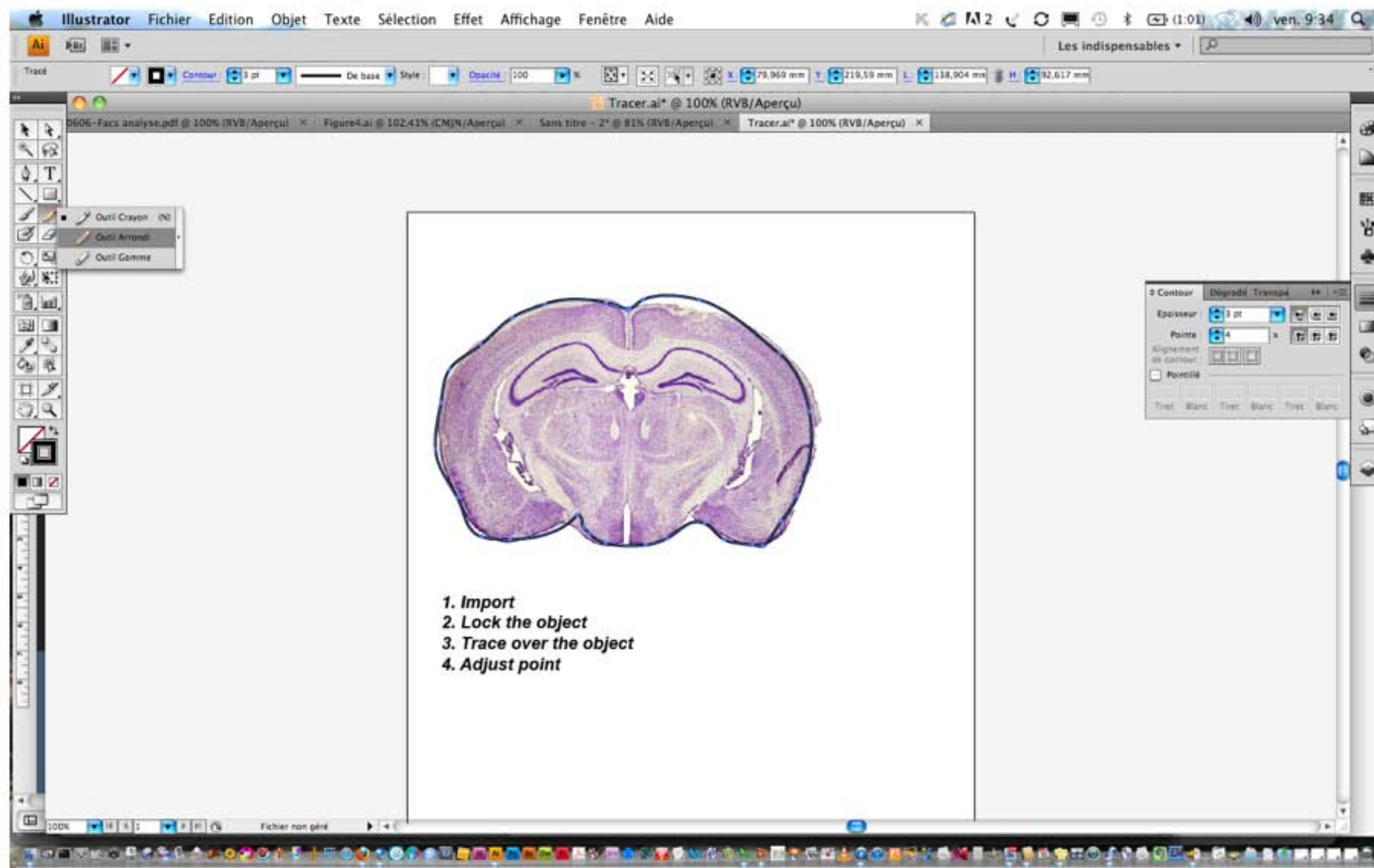






# Drawing in Illustrator

## • Tracing over an Illustration :

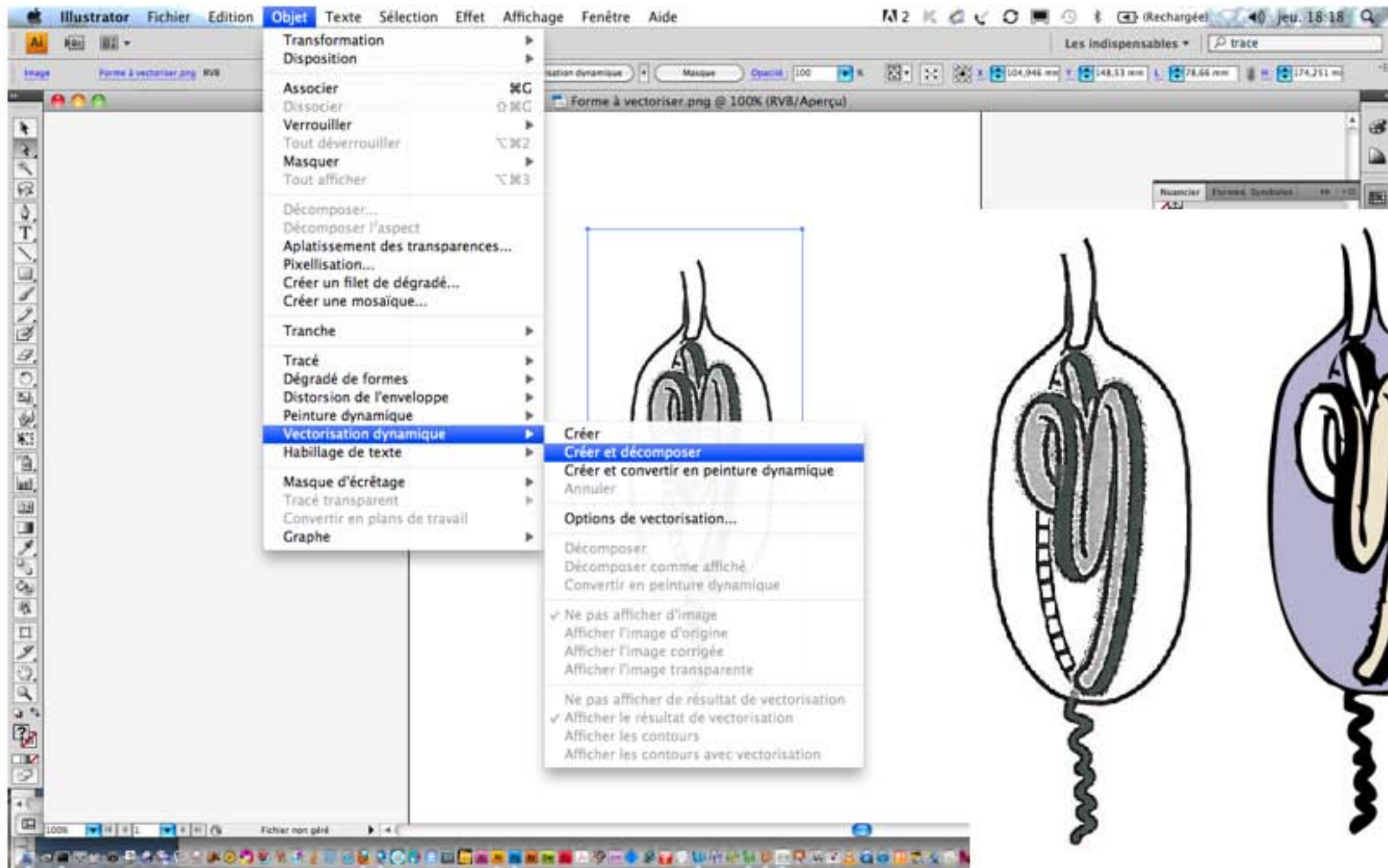




# Generating vector art

There are 3 common ways to create vector art :

- Trace an existing piece of pixel art







## Chapter 18



# Working with Vector Art

### Creation of vector art with Adobe Illustrator

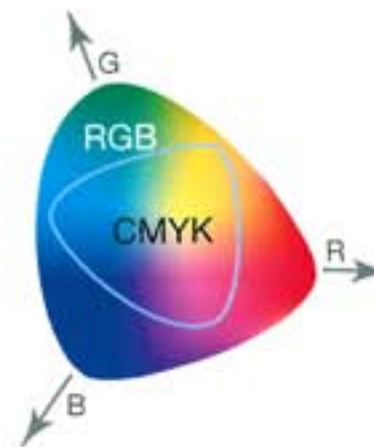
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- *Drawing a shema directly in Illustrator*
- *Converting a photo or a scan in a editable schema*

### Anatomy of vector Art

- *How to use Bézier curves*
- *Selecting and manipulating objects*
- *Transparancy and layers*
- *Illustrator tips and shortcuts*

### InDesign: how to design scientific figures and books

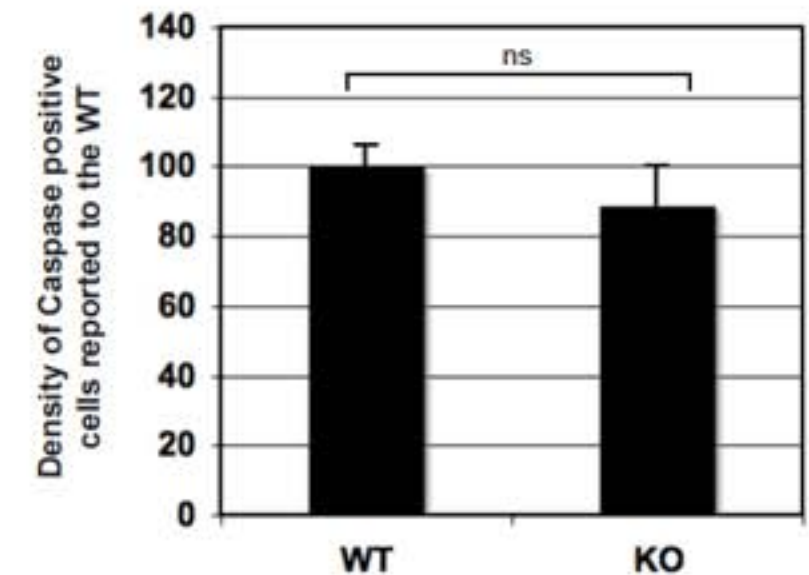
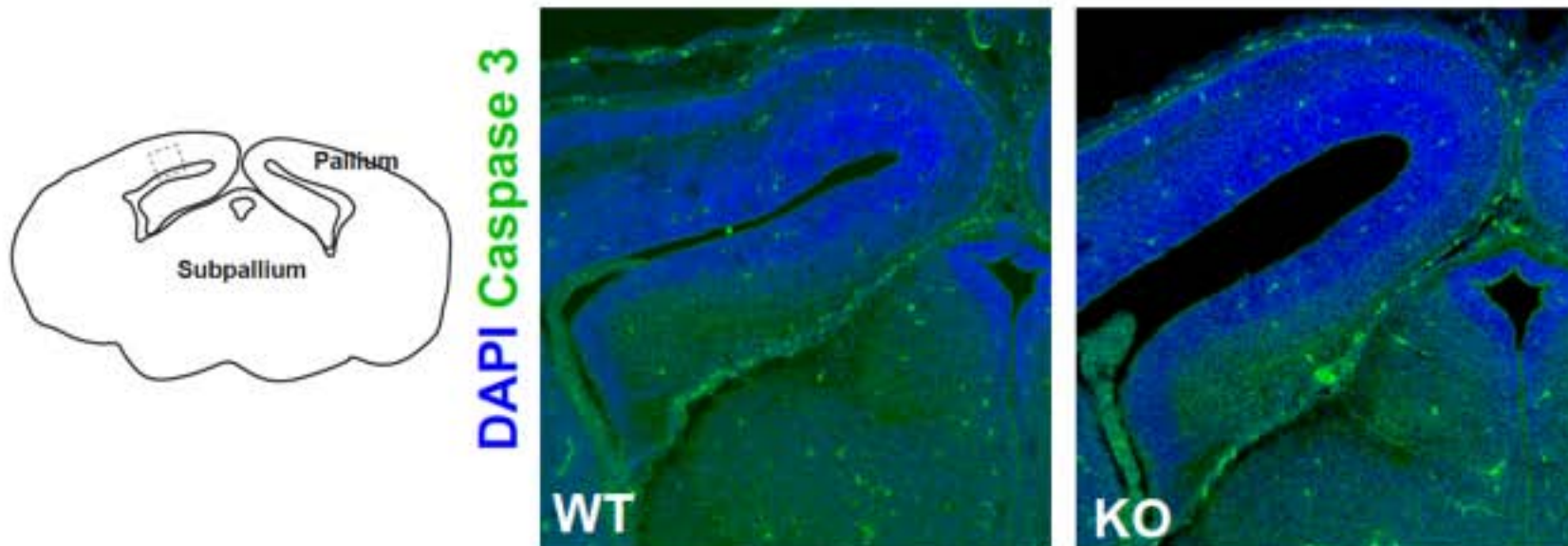
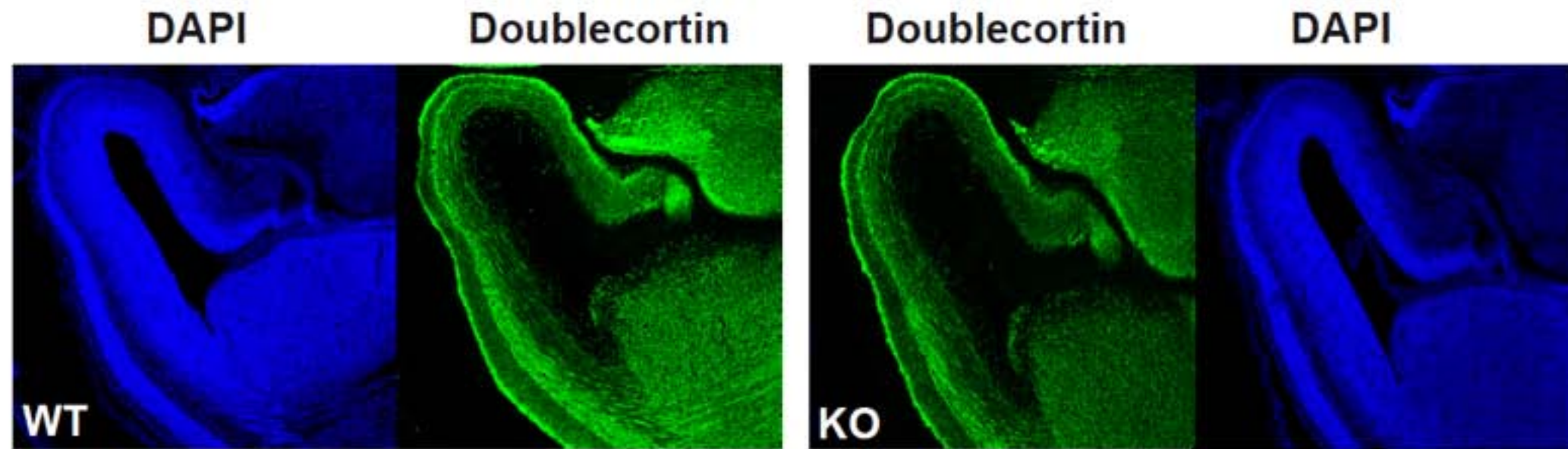
- *Why using Indesign for generating your PhD memory*
- *Creating figures with picture, graphics and photos*







## Combining vector & pixels



- Graphical elements and annotations should be kept with vector art (editable, scalable).
- Most vector file format (such as PDF) allow importation of photos, which will be embedded in file.