

Biological network-driven gene selection identifies a stromal immune module as a key determinant of triple-negative breast carcinoma prognosis

OncoImmunology, <http://dx.doi.org/10.1080/2162402X.2015.1061176>

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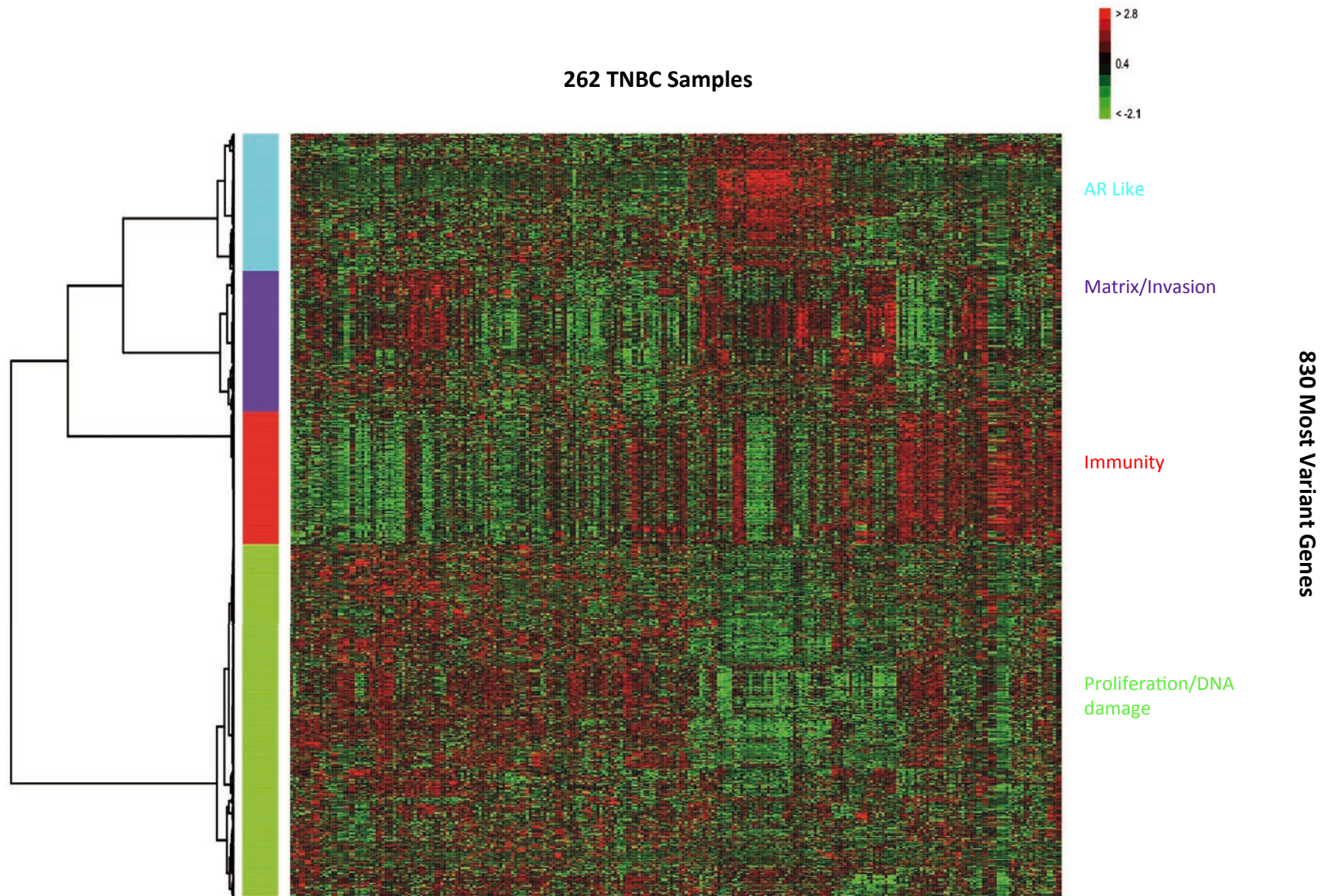
25/09/2015



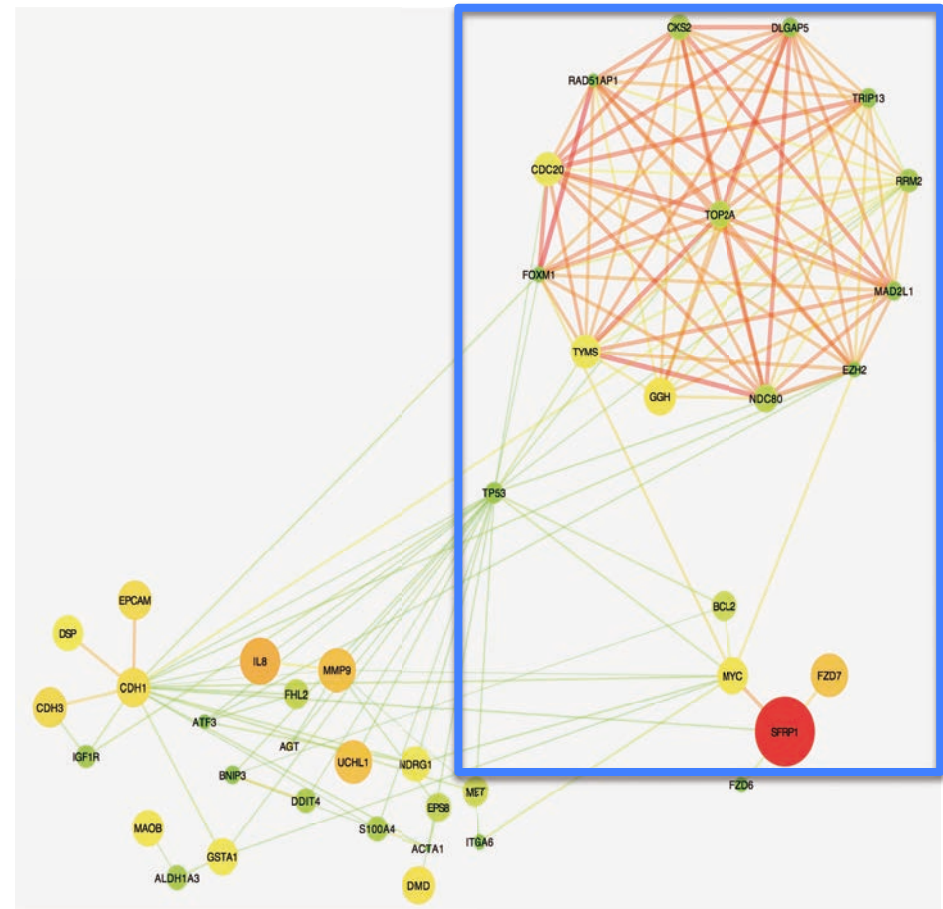
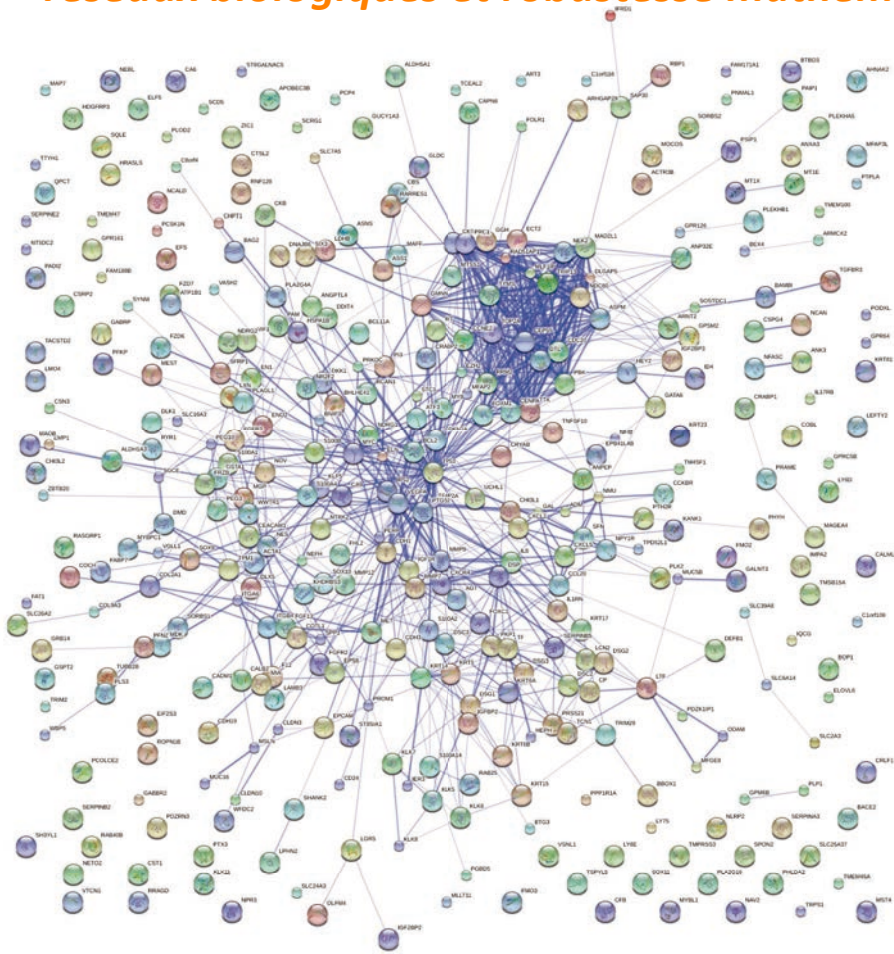
Cancers du sein triple-négatif

- RH négatif et HER2 négatif (IHC)
- 15 à 20% des cancers du sein
- Défi clinique important
 - Maladie agressive (Dent *et al.* 2007)
 - taux élevé de métastases à distance précoces (34%)
 - pronostic défavorable (SG à 10 ans 60%)
 - Pas de thérapie ciblée disponible
- Groupe hétérogène
 - Biologie
 - Pronostic
 - Réponse au traitement

Analyse des profils d'expression ARN de CSTN



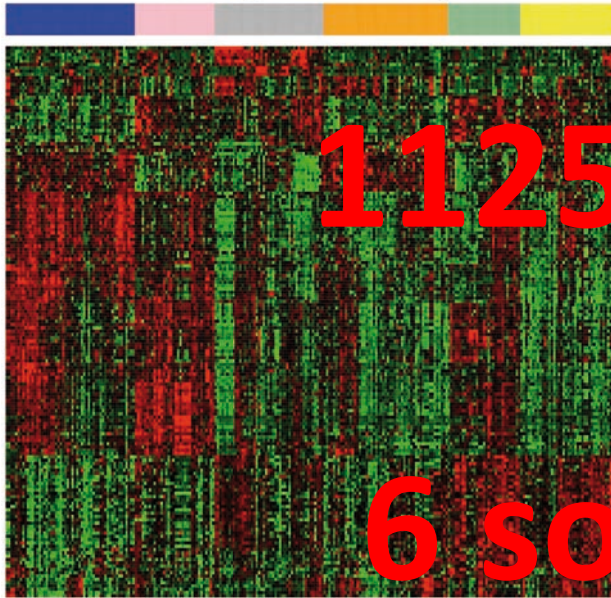
Sélection des gènes d'intérêt selon un procédé original: réseaux biologiques et robustesse mathématique



- Centroid1
- Centroid2
- Centroid3
- Centroid4
- Centroid5
- Centroid6

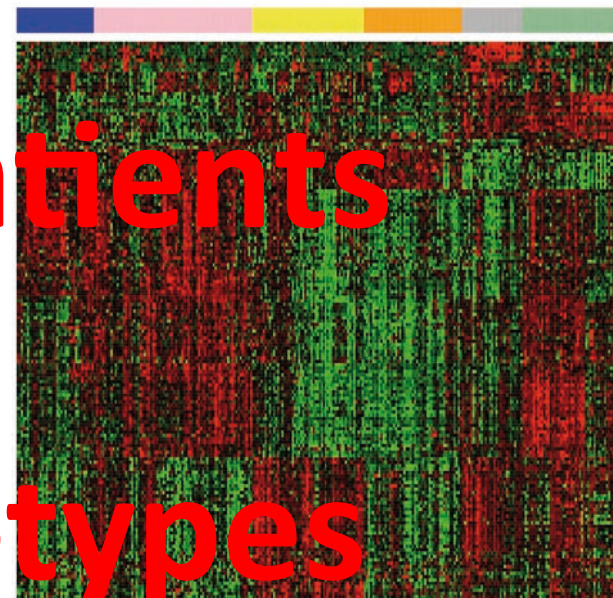
Training Set: 262 samples

167 Genes



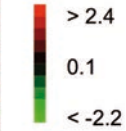
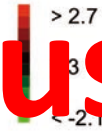
Validation Set: 295 samples

167 Genes



Centroids (Training vs Validation set) Pearson correlation score.

- Centroid1 (0.90)
- Centroid2 (0.83)
- Centroid3 (0.72)
- Centroid4 (0.91)
- Centroid5 (0.63)
- Centroid6 (0.51)



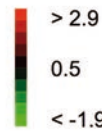
6 sous-types

moléculaires stables

Centroids (Training vs Ignatiadis set) Pearson correlation score.

- Centroid1 (0.77)
- Centroid2 (0.92)
- Centroid3 (0.84)
- Centroid4 (0.62)
- Centroid5 (0.69)
- Centroid6 (0.35)

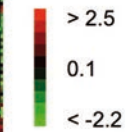
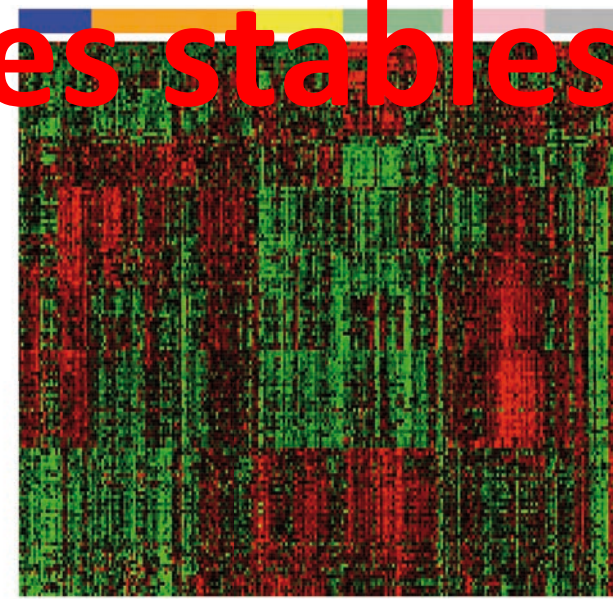
167 Genes



Centroids (Training vs METABRIC set) Pearson correlation score.

- Centroid1 (0.71)
- Centroid2 (0.77)
- Centroid3 (0.25)
- Centroid4 (0.82)
- Centroid5 (0.77)
- Centroid6 (0.42)

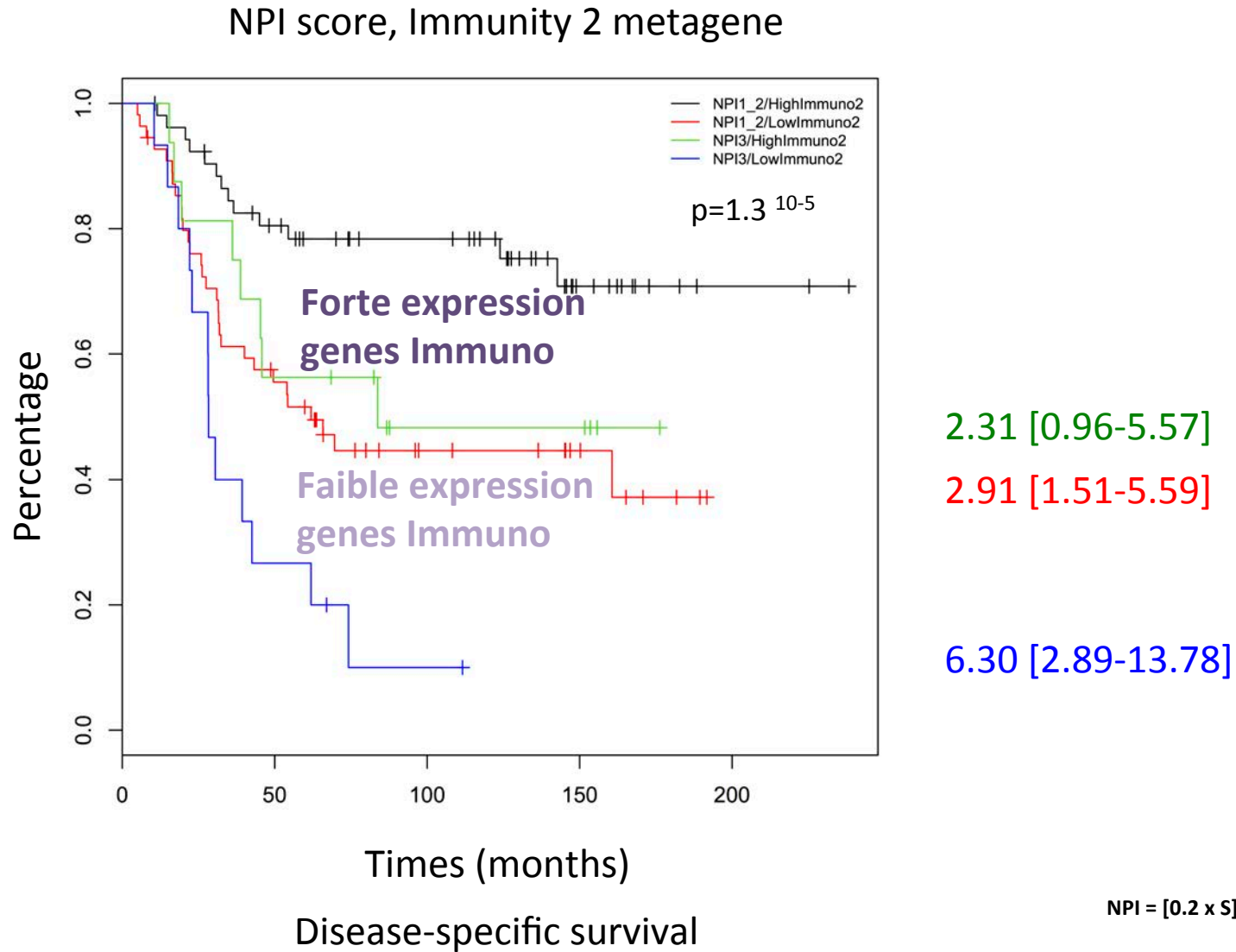
153 Genes



Ignatiadis set: 314 samples

METABRIC Set: 254 samples

**Expression de certains gènes immunitaires:
Un impact pronostique majeur**

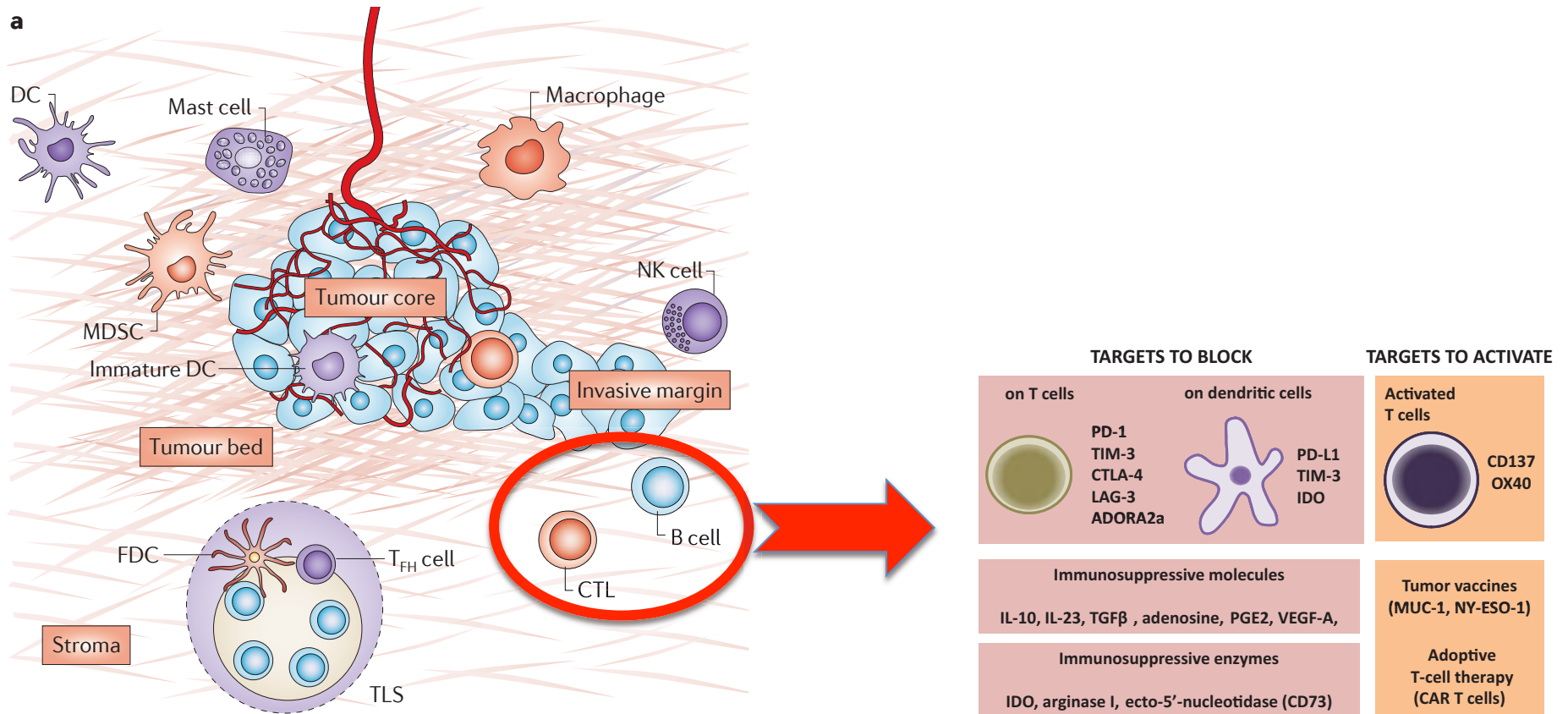


$NPI = [0.2 \times S] + N + G$

S : size of the lesion in centimetres
N : number of lymph nodes involved
G : grade of tumour

METABRIC dataset. Curtis *et al.* Nature, 2012.

Ces gènes immunitaires du micro-environnement tumoral: Des pistes thérapeutiques prometteuses



The immune contexture in human tumours: impact on clinical outcome. *Nat Rev Cancer*. 2012. 12(4): 298-306.

Immunotherapeutic approaches in triple-negative breast cancer: latest research and clinical prospects. *Ther Adv Med Oncol*. 2013. 5 (3): 169-181.