Perte de l'audition liée au vieillissement

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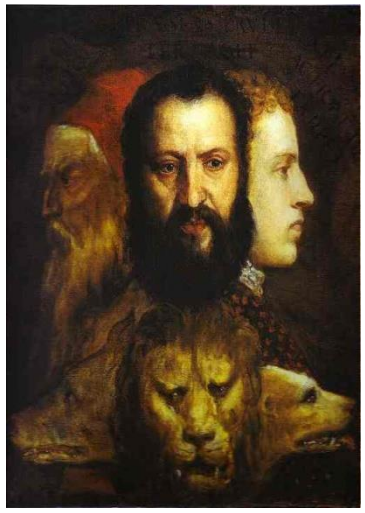
Vieillissement



1. Vieillissement:

- **Aspects physiologiques:** la perte progressive des fonctions physiologiques de l'organisme: respiration, circulation, locomotion, capacités sensorielles, fertilité…

- **Aspects émotionnels:** le sentiment d'inutilité, de la solitude et de l'abandon .

2. Maladies liées au vieillissement:

Alzheimer, Parkinson, cancers, presbyacousie…

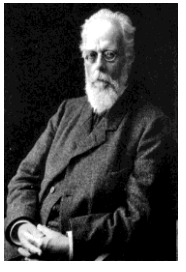
Théories du Vieillissement

(plus de 300 théories)

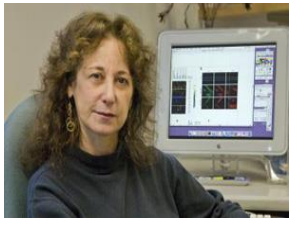
1. **Théories évolutionnistes du vieillissement (***Charles Darwin en 1859* **)**:
   Adaptation, sélection naturelle, renouvellement…

2. **Théories métaboliques « Usure »:** les cellules endommagées par leur sur-utilisation et les abus qu'elles subissent (toxines alimentaires, stress envirolemental…)

   Auguste Weismann en 1882

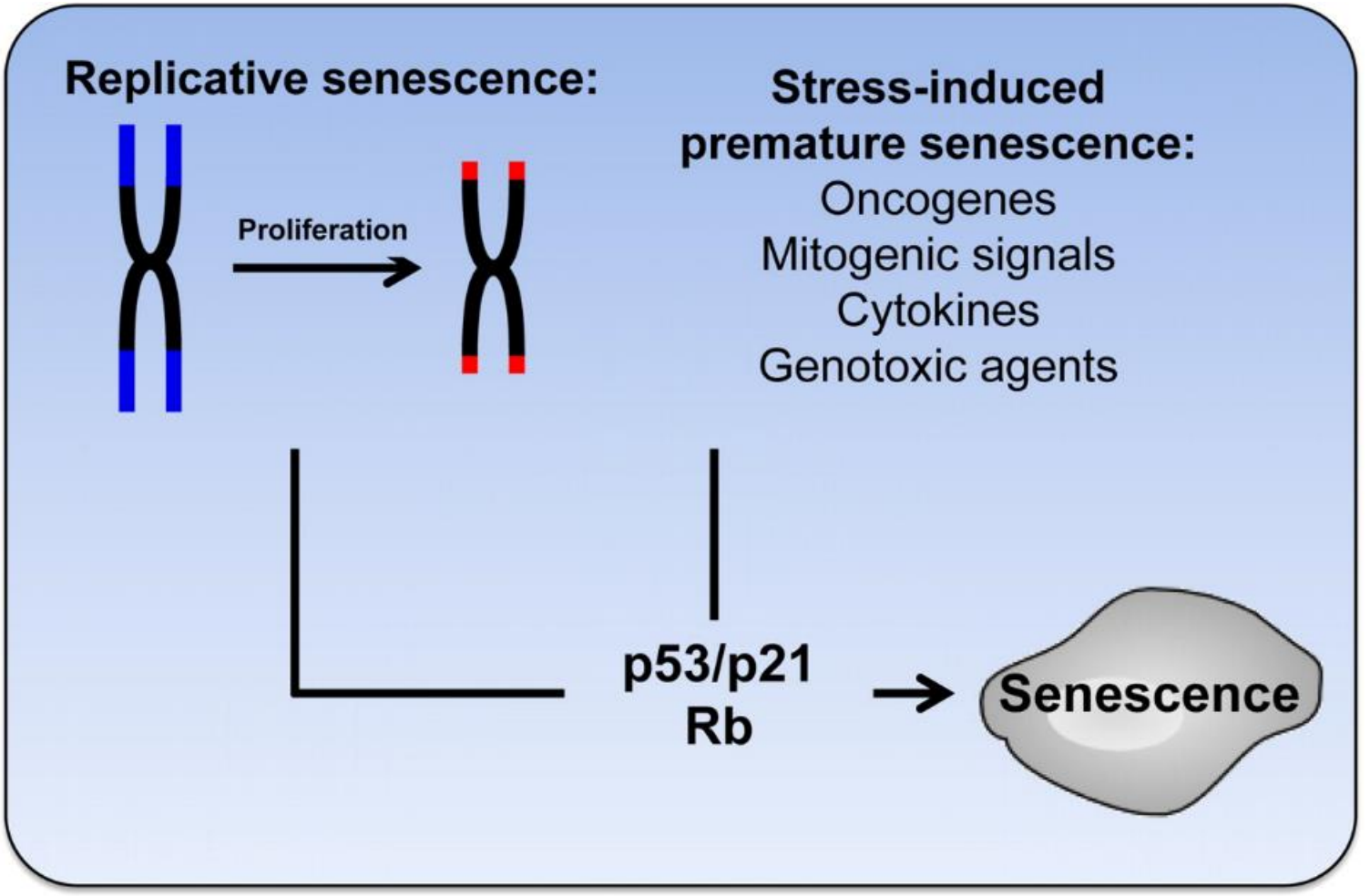


3. **Théories génétiques:**
   -. Horloges biologiques: raccourcissement des télomères (génétiquement programmés)*Campisi, 1997*
   -. Accumulation d' erreurs



4. **Théories environnementales:**
   -. Radicaux libres de l'oxygène, *Harman, 1972*
   -. Pollution, radiations…

Vieillissement



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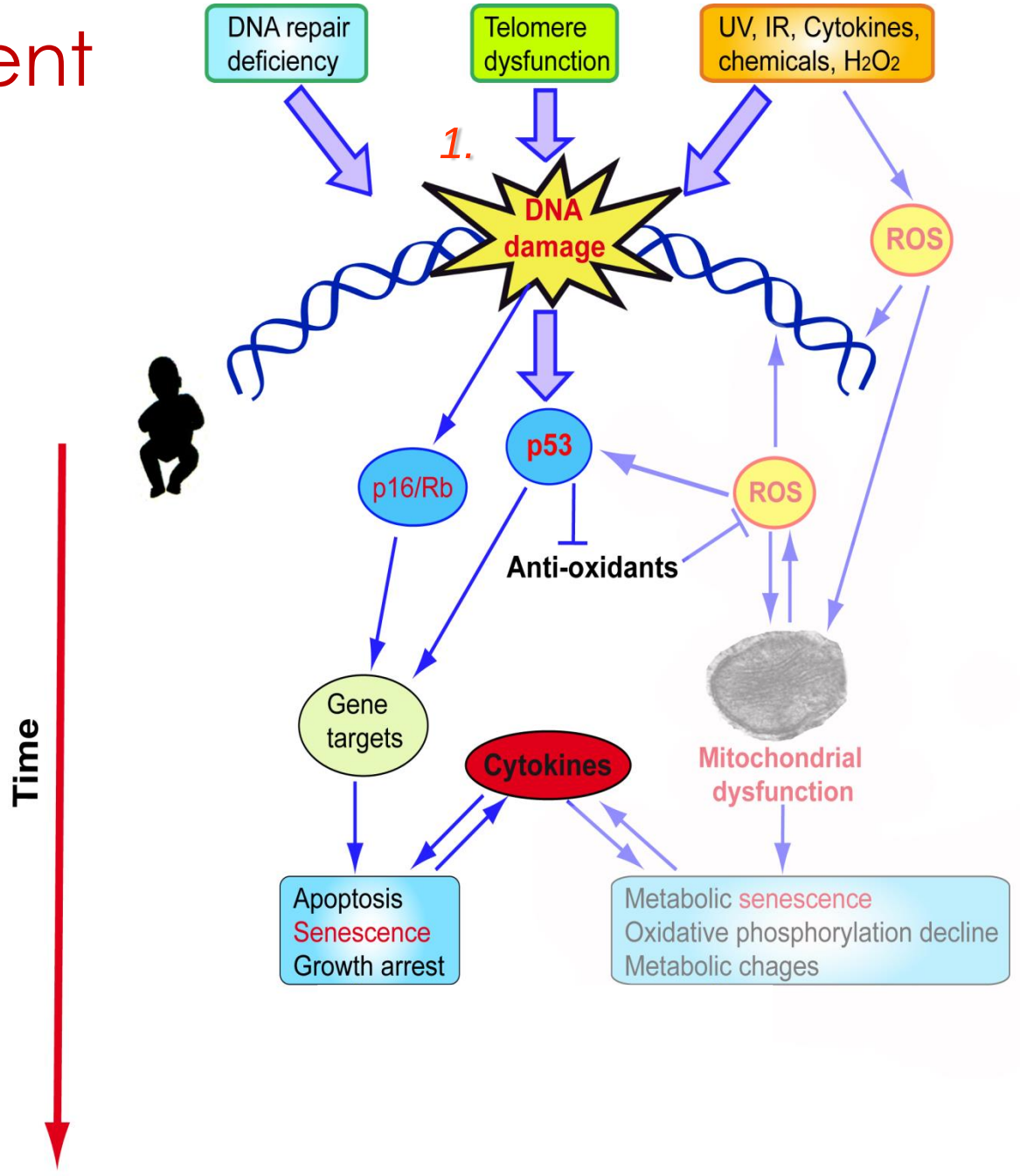

Adapté de :

Sahin E and Depinho RA, Nature, 464, 25, 2010;

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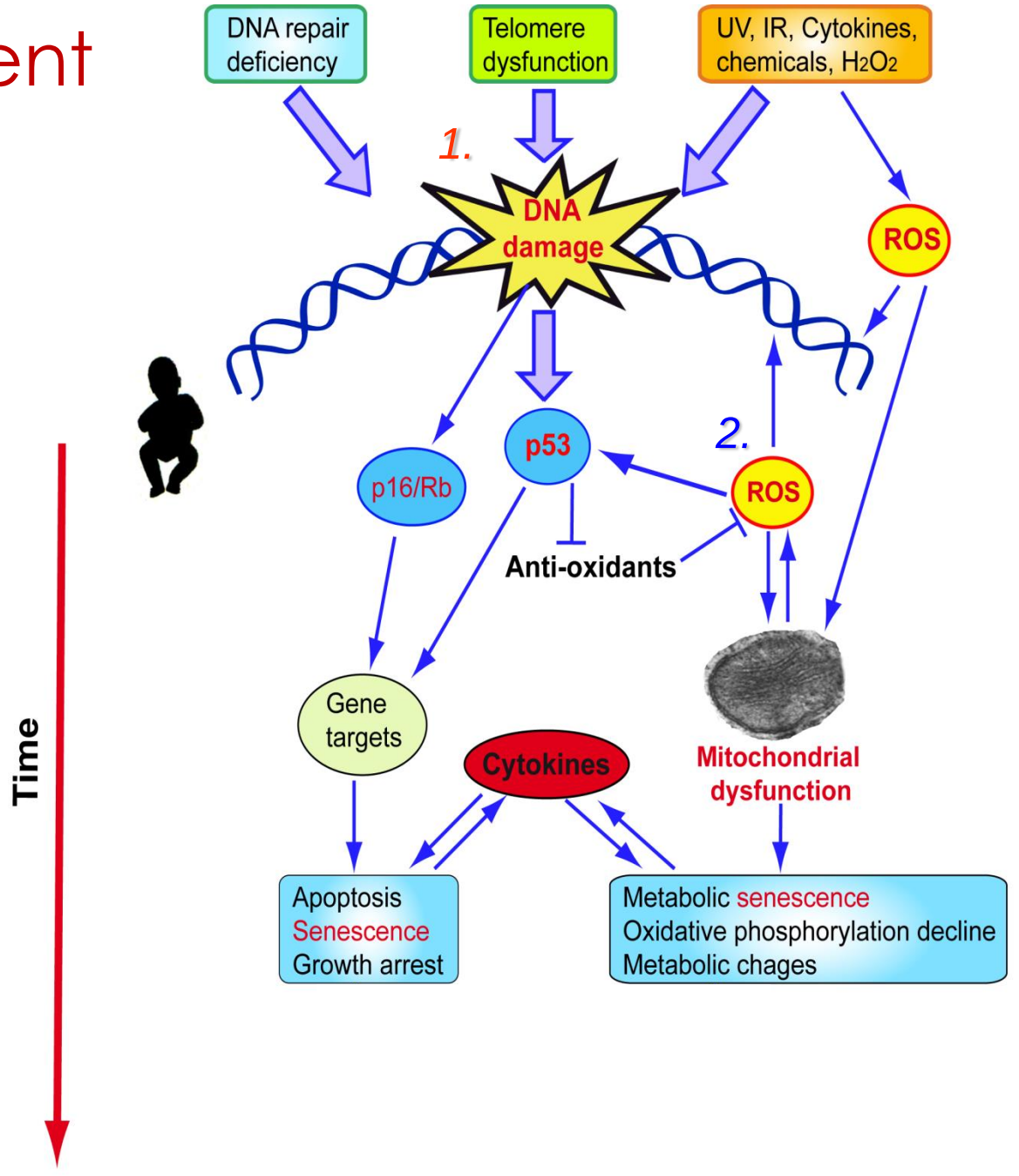

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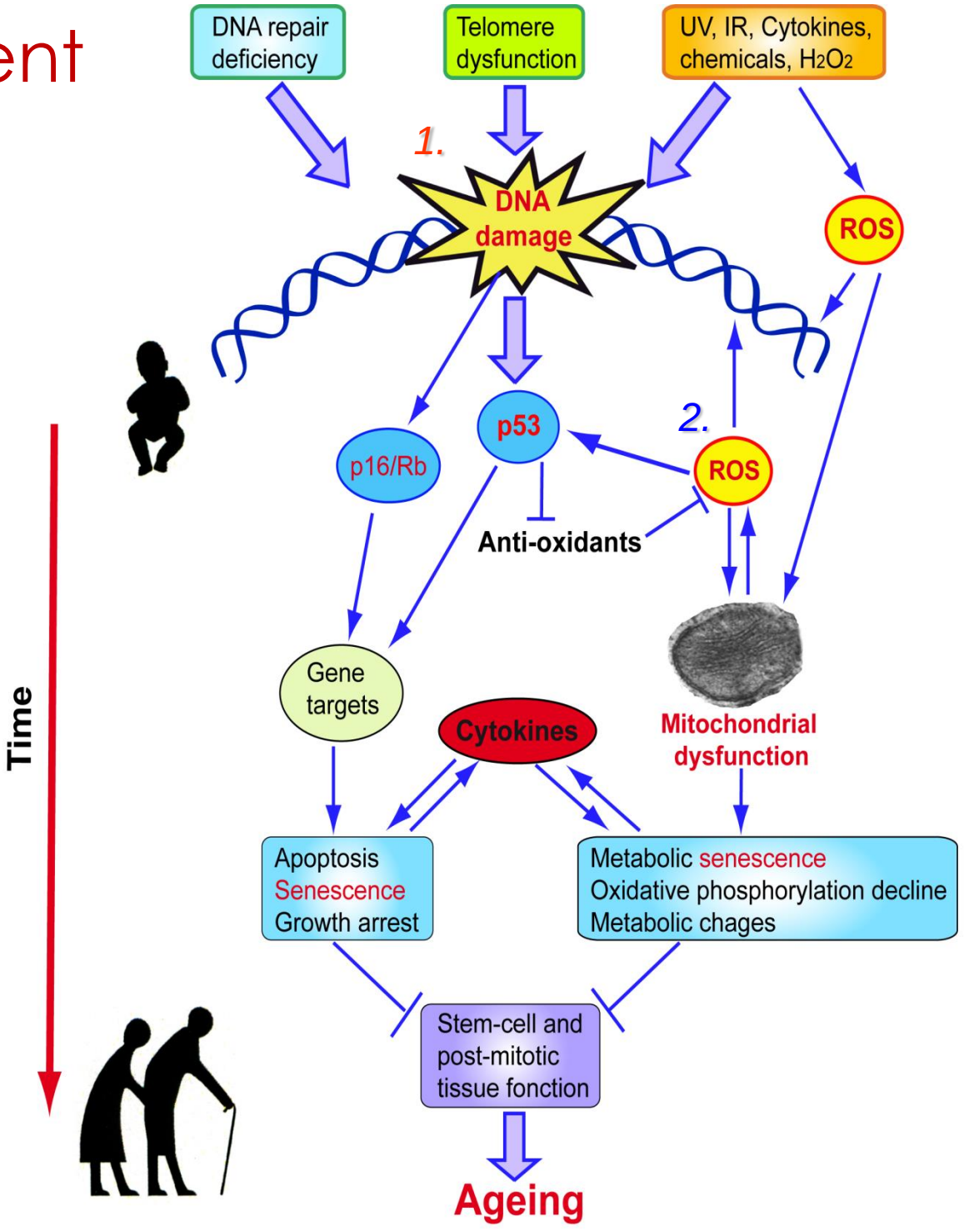

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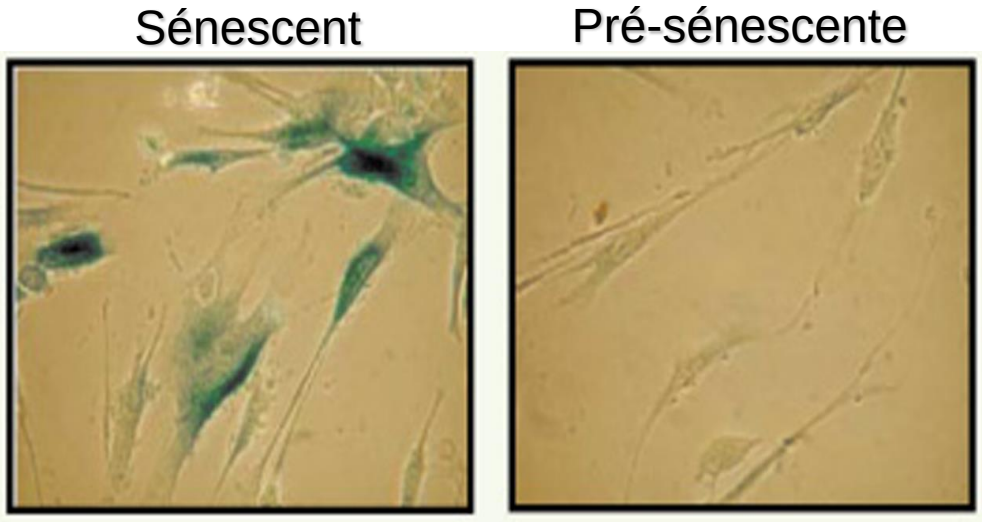
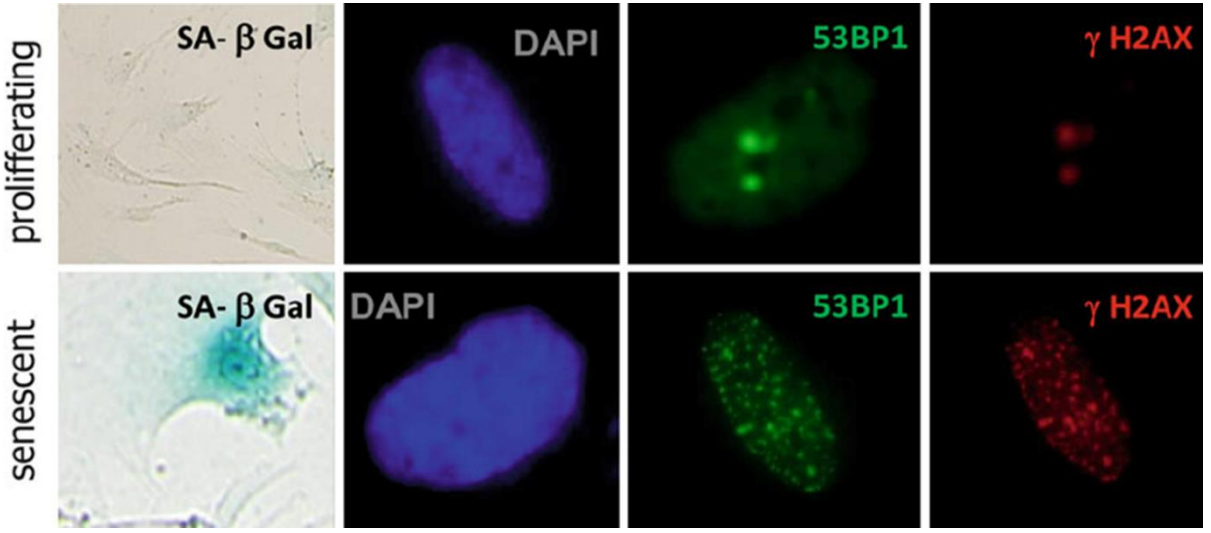
Cellules sénescentes



Morphologies: *aplatissement, valuolisation, lipofuscine….*

Biochimies et moléculaire: *SA-β-Gal, p21, p53, p15…*



Chromatine: *SAHFs , p-H2AX, 53BP1*

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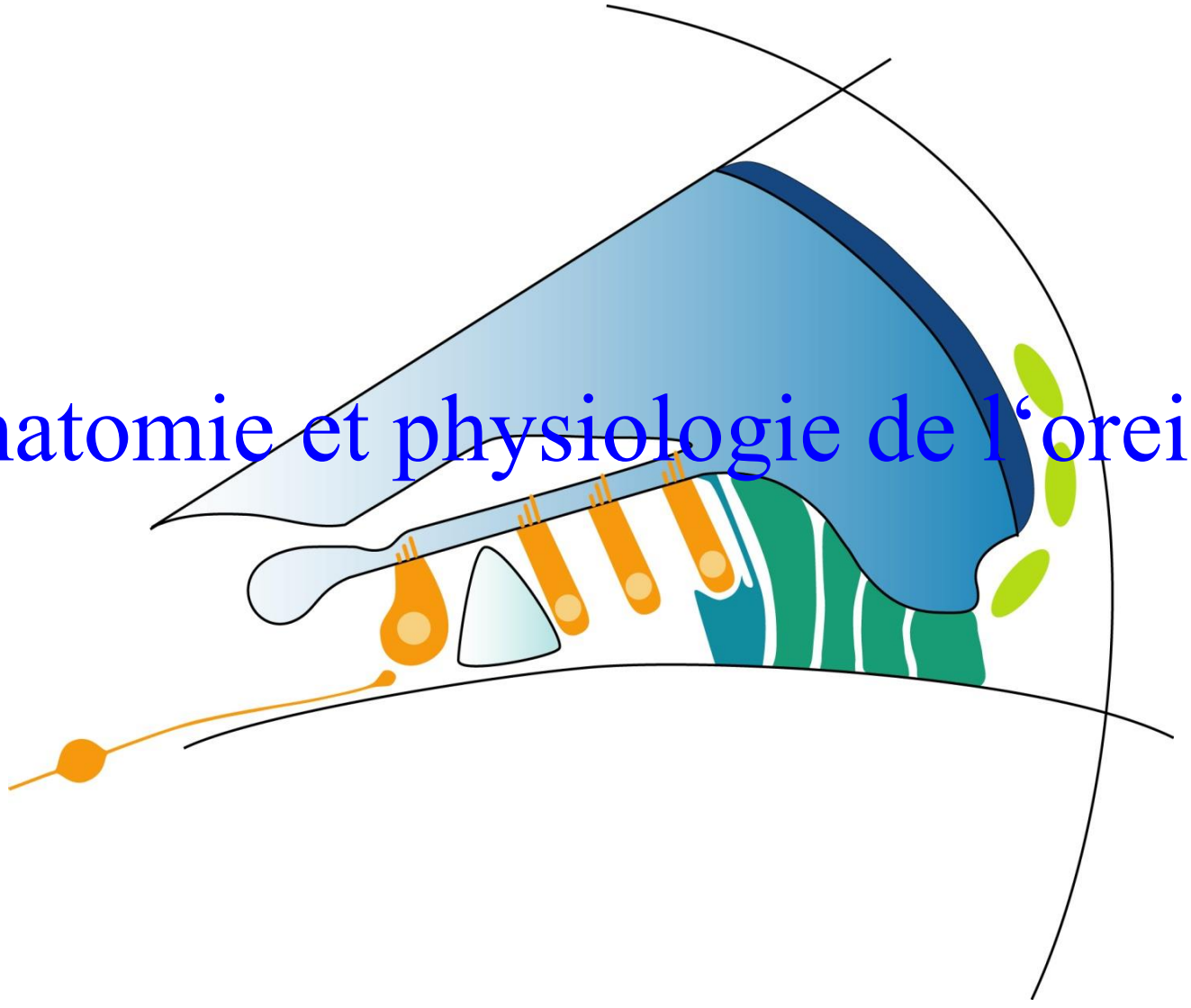
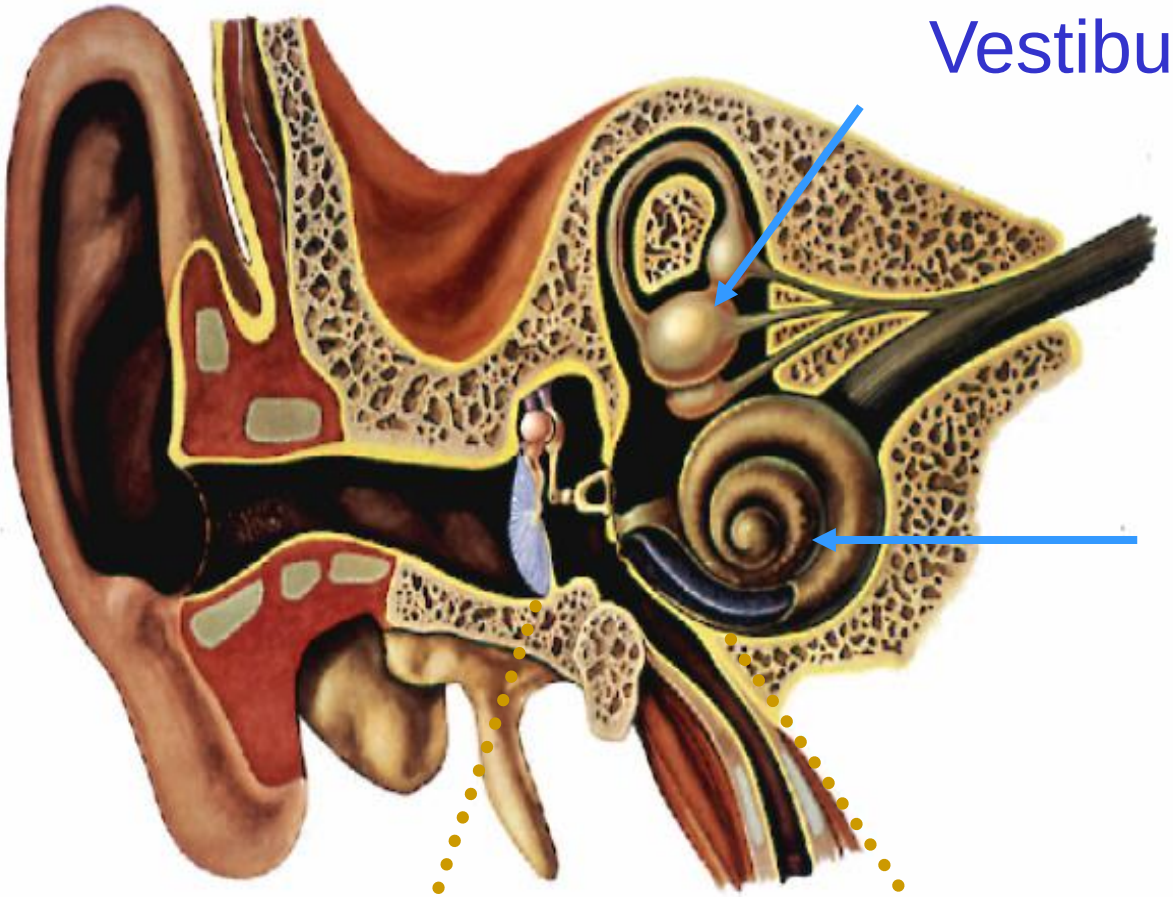
Anatomie et physiologie de l'oreille

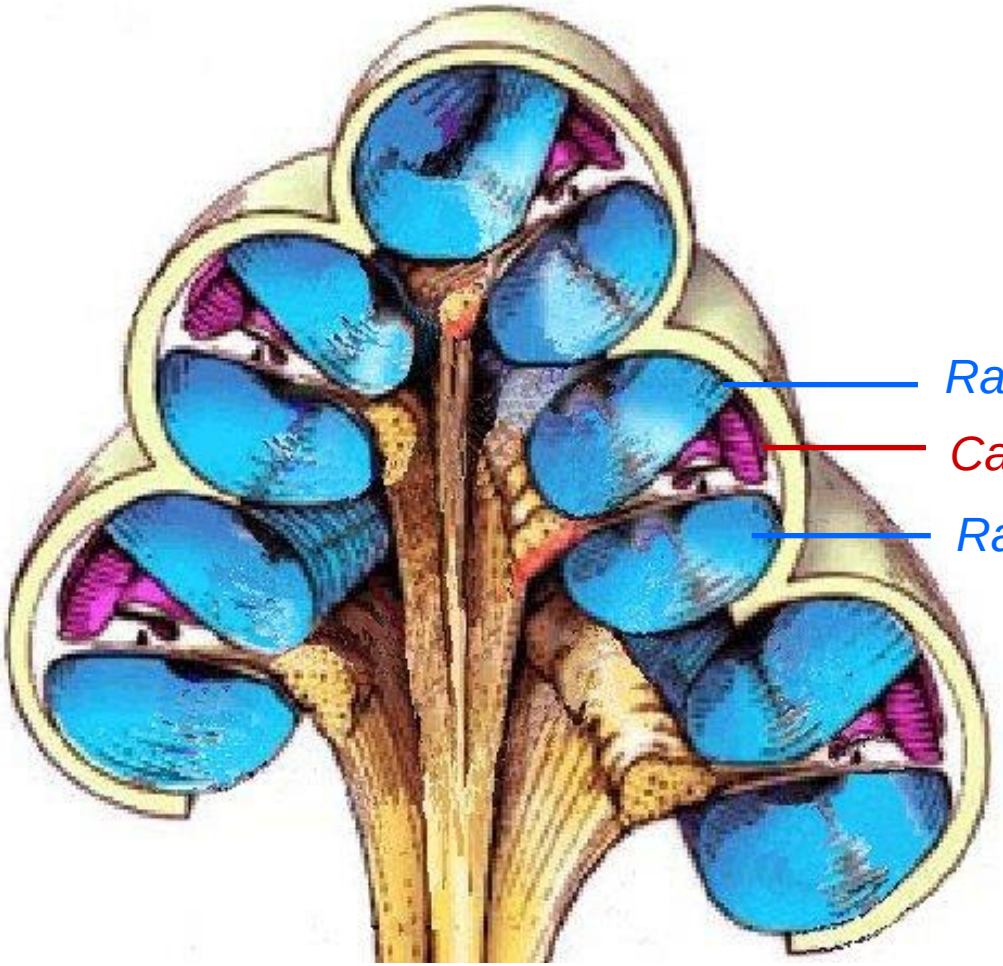


L'oreille



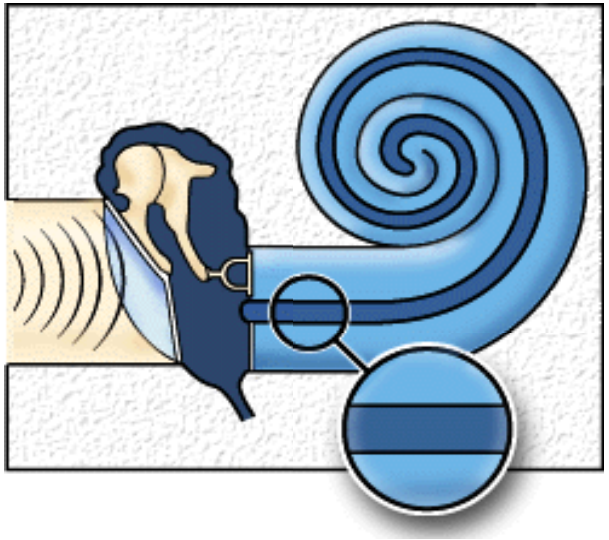
Oreille externe **Oreille moyenne** **Oreille interne**

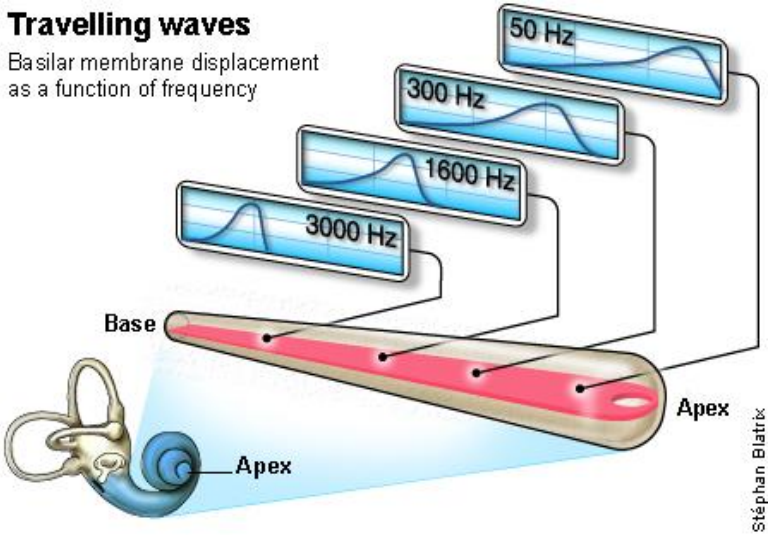
L'oreille

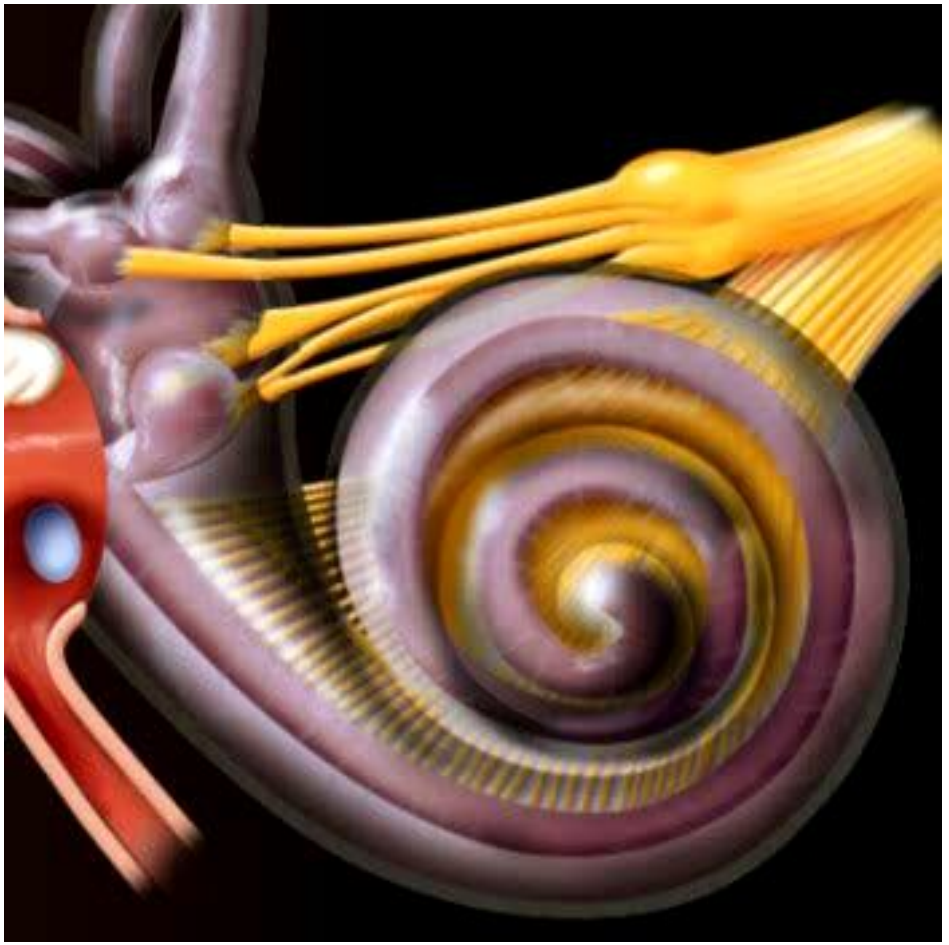


http://www.iurc.montp.inserm.fr/cric/audition/english/start2.htm

Distribution des fréquences le long de la membrane basilaire







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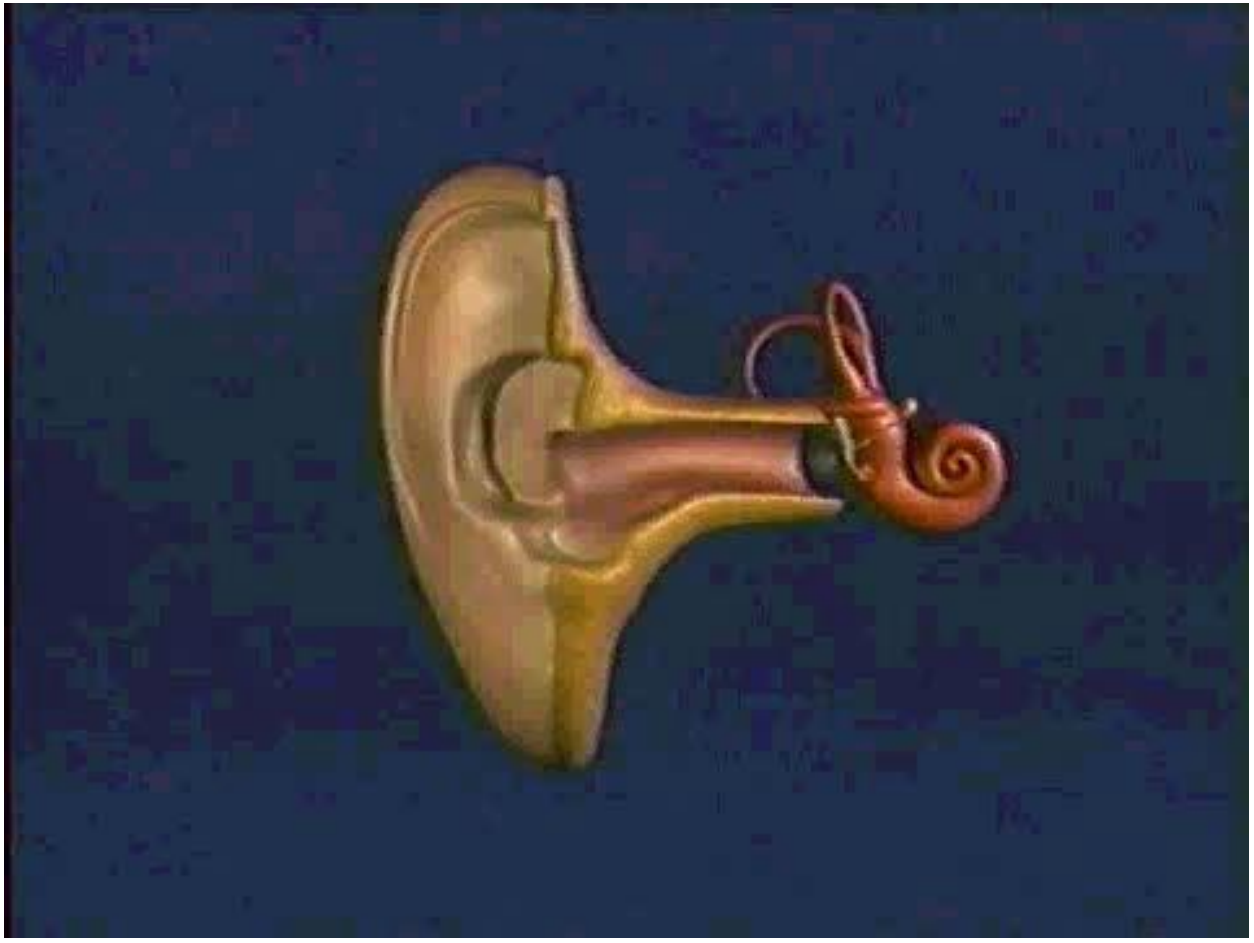

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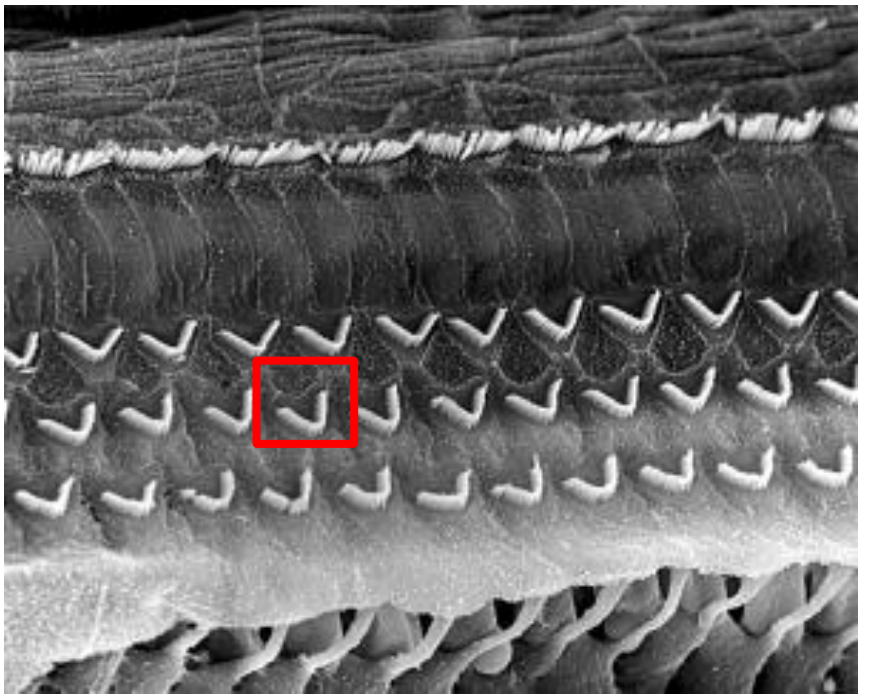
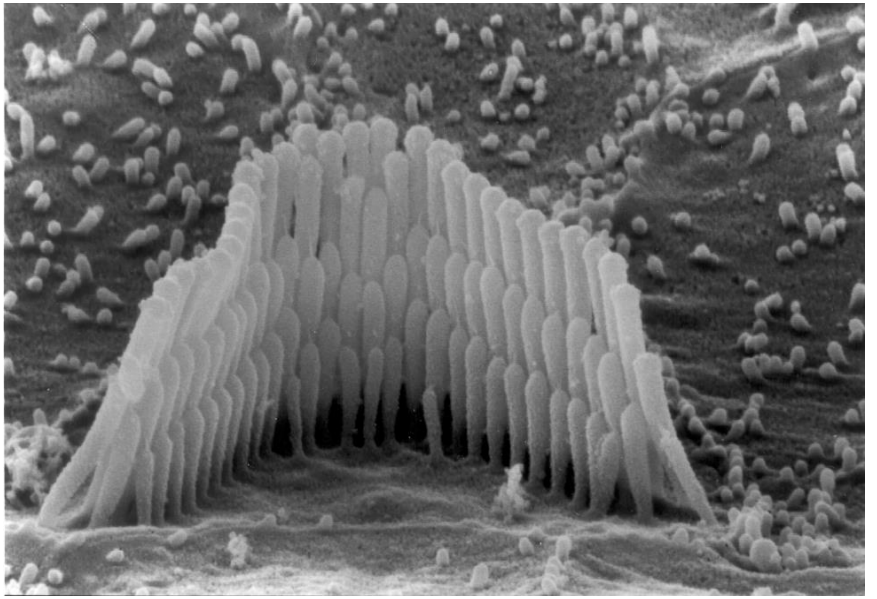
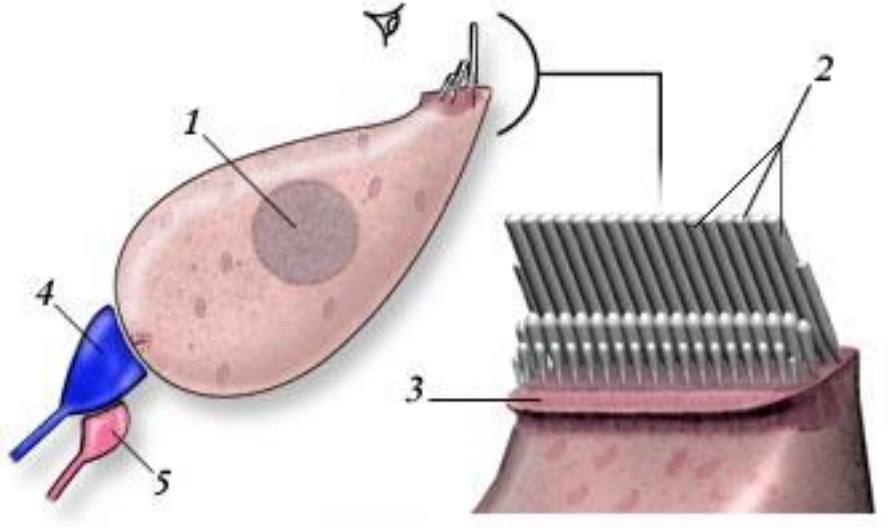
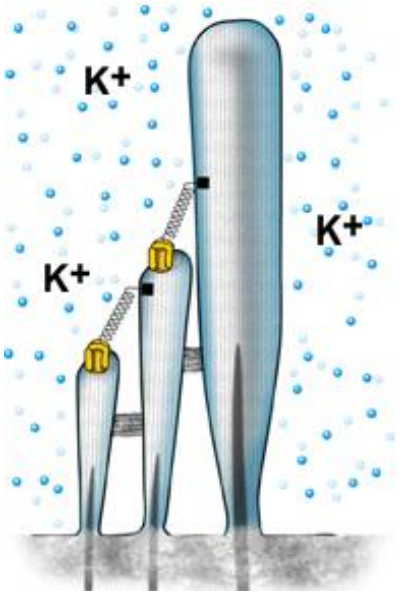
L'organe de Corti





Les cellules ciliées internes





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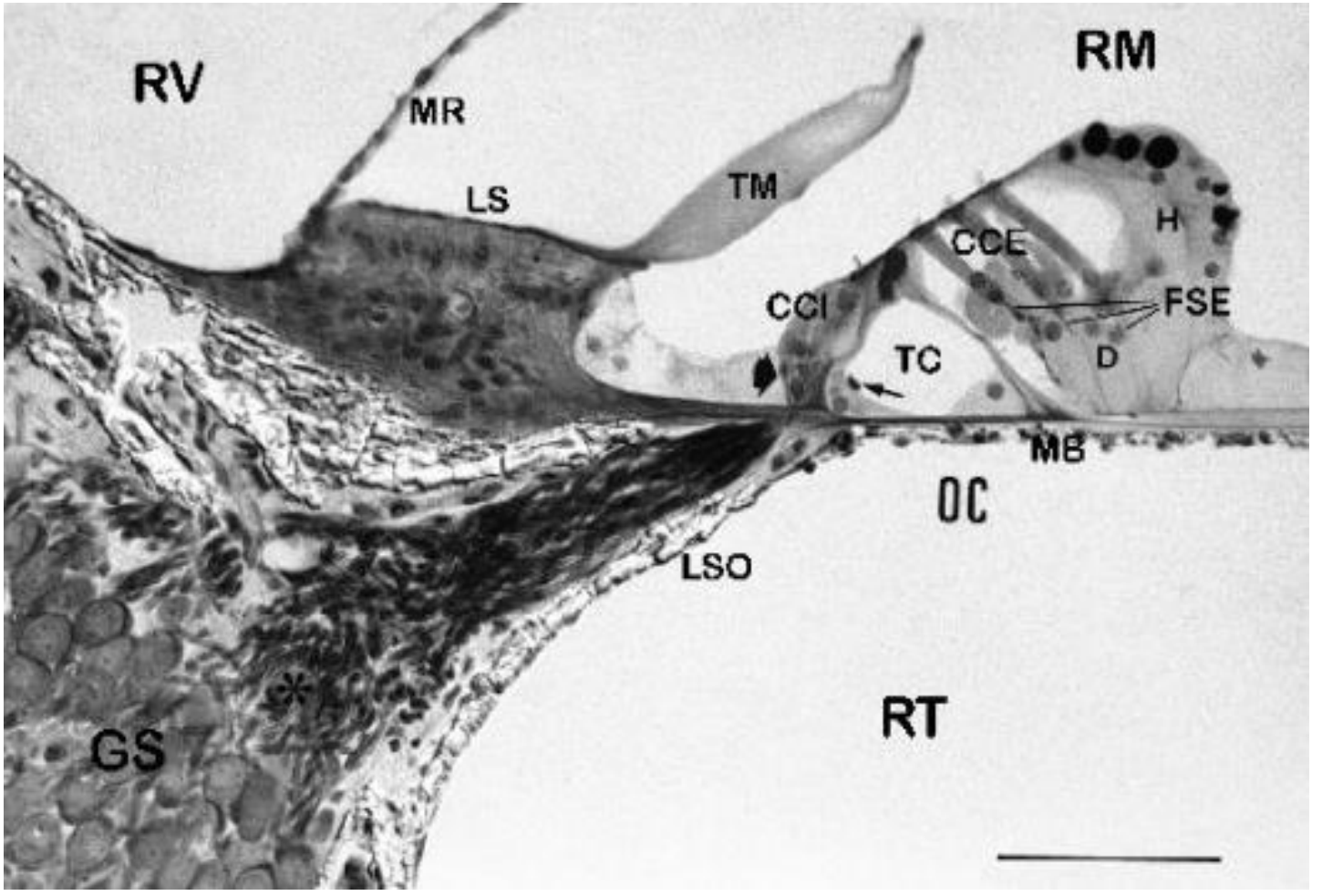
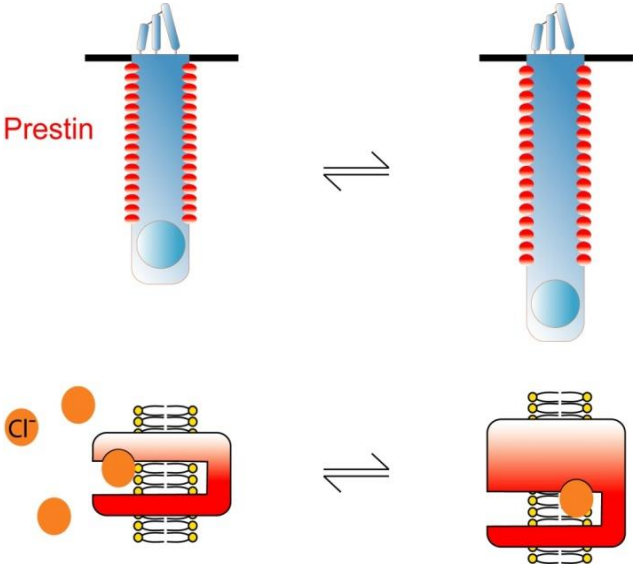
L'organe de Corti



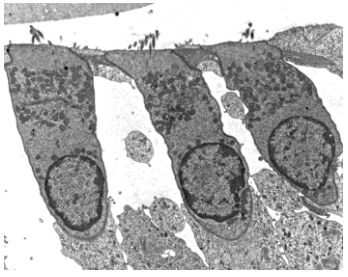
Les cellules ciliées externes

Electromotilité

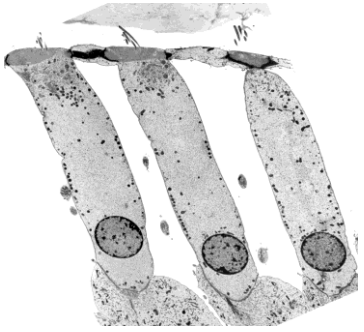
Prestine



Base



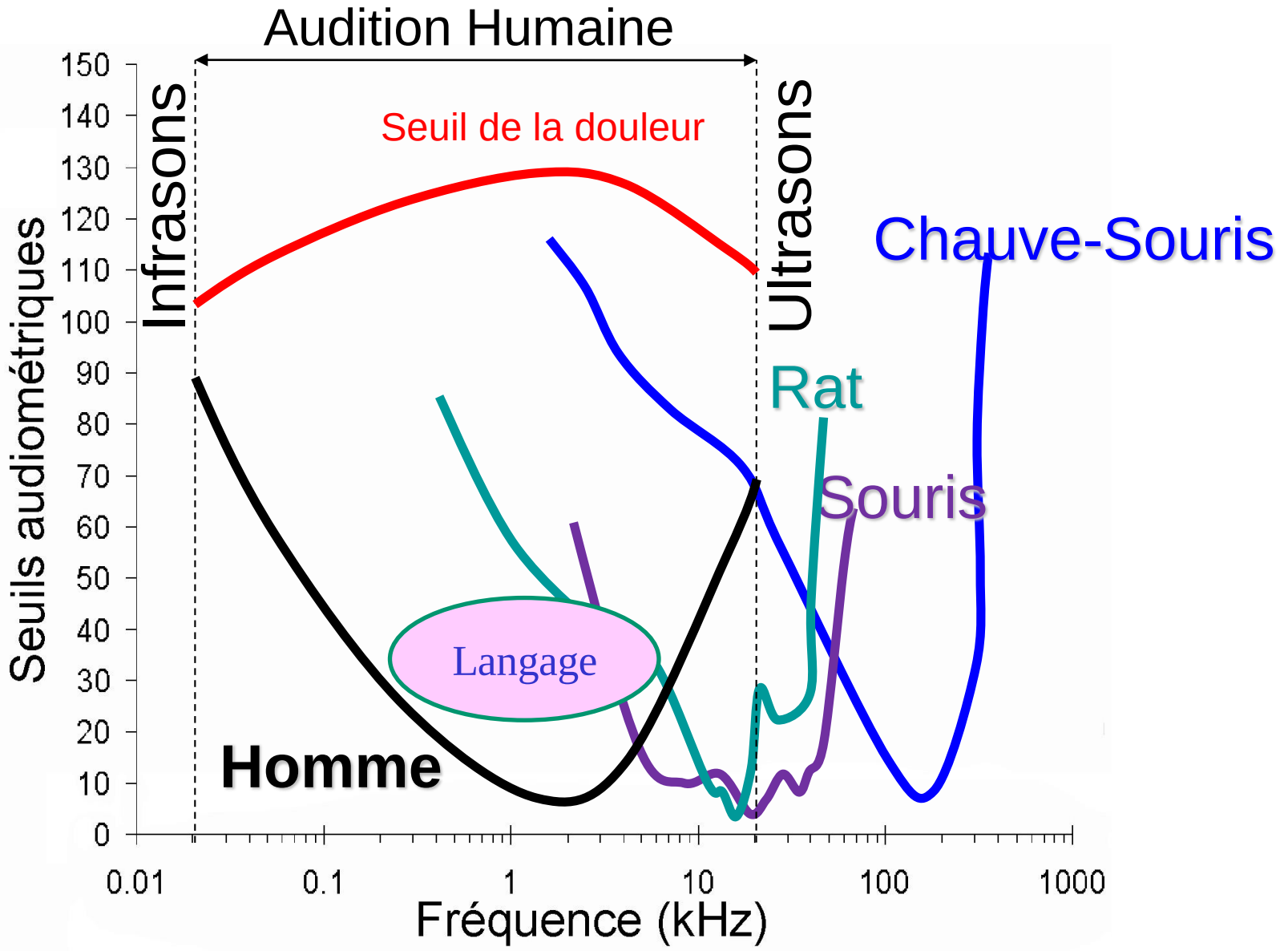
Apex



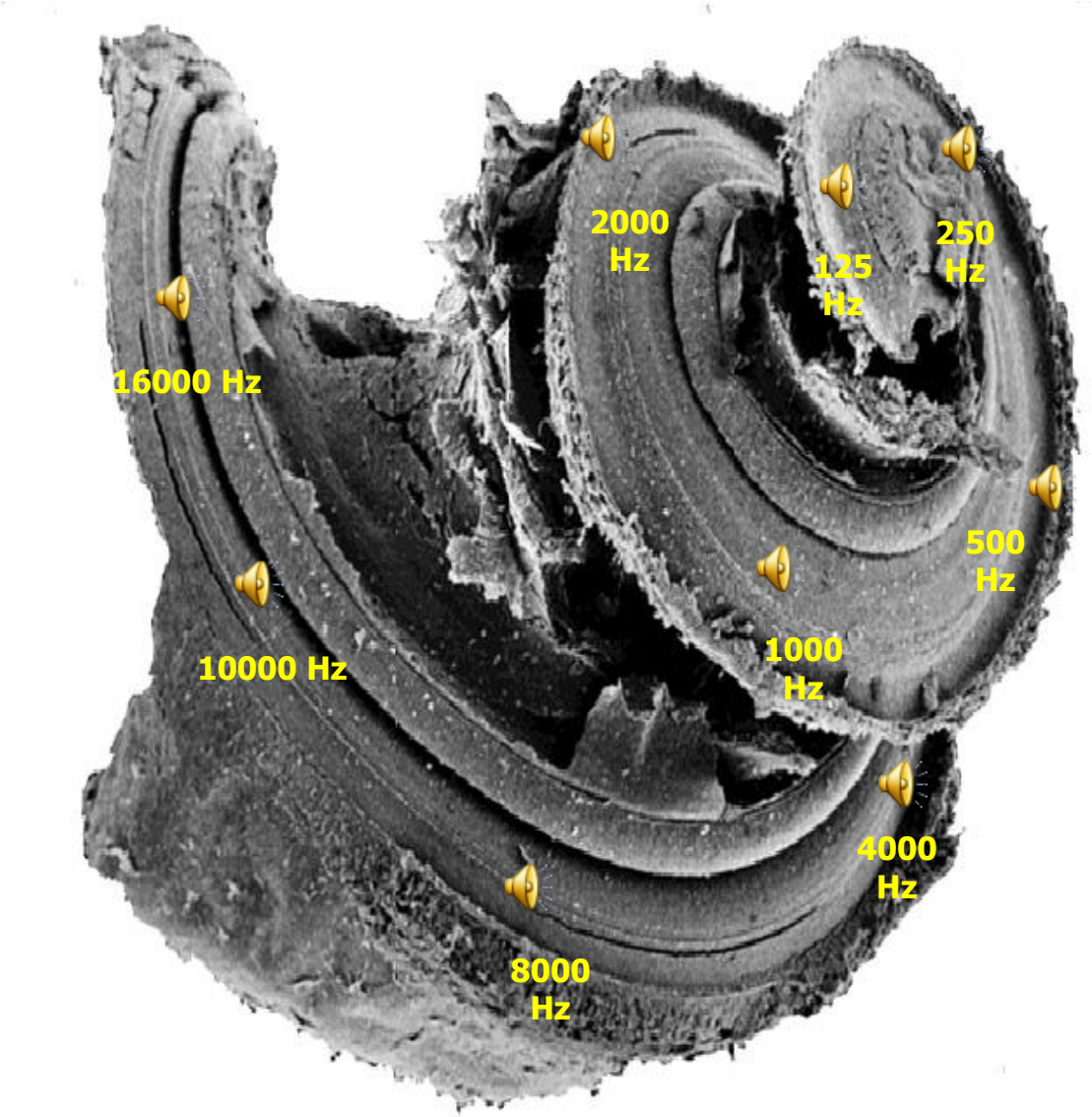
1. Amplification des vibrations + 60 dB
2. Filtrage sélectif des fréquences

Tonotopie active

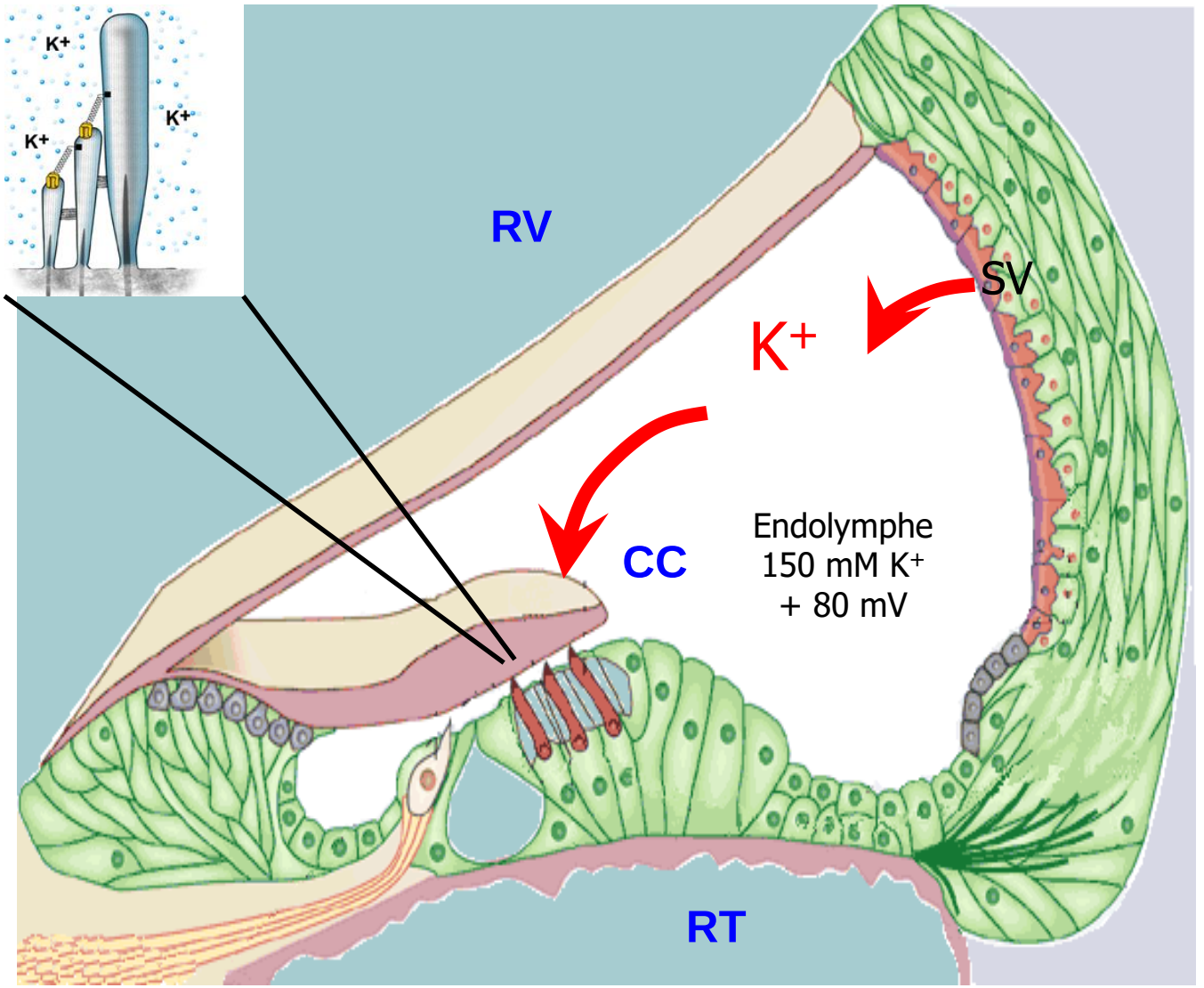
Audiogrammes

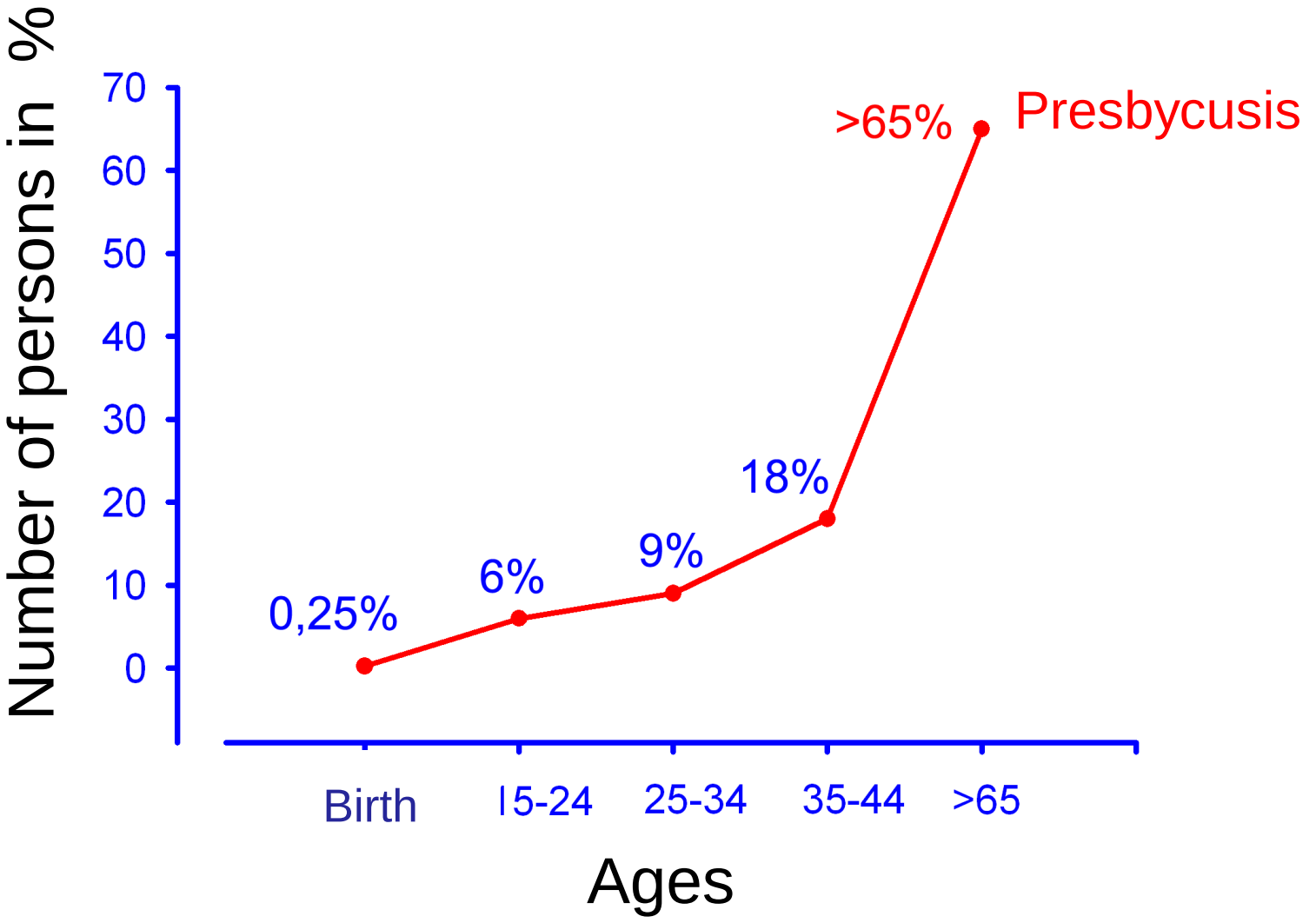


Distribution des fréquences le long de la cochlée



La strie vasculaire

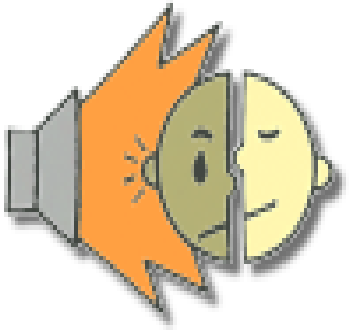



Number of persons in %
70
60
50
40
30
20
10
0
0,25%
6%
9%
18%
>65%
Presbycusis
Birth
15-24
25-34
35-44
>65
Ages

Facteurs de risques

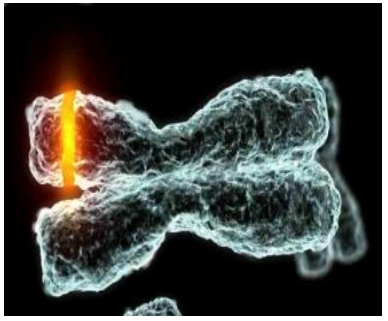
Facteurs environnementaux

Bruits



Médicaments ototoxiques

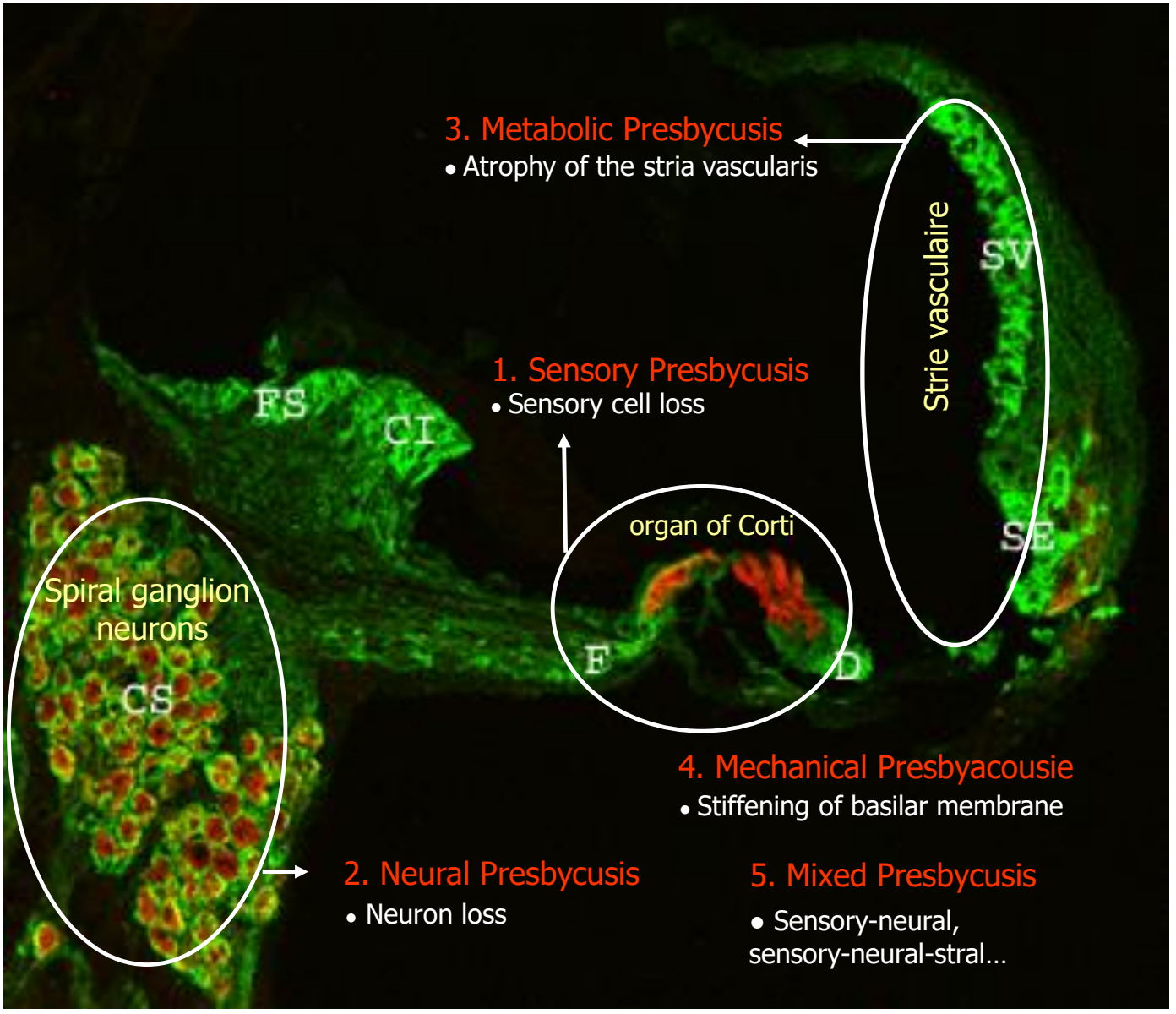
Facteurs génétiques



Âge

Classifications

Schuknecht and Gacek, 1993



Symptômes

Signes cliniques:

- Stade de début : Baisse de la perception des sons aigus et difficulté de compréhension dans un milieu bruyant

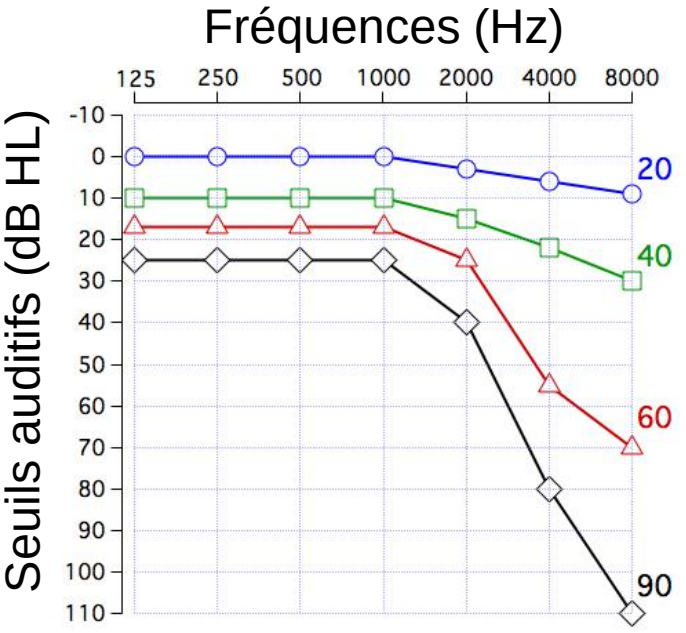
- Stade suivant : Difficulté de compréhension dans un milieu calme et intolérance aux sons forts

- Stade final : Surdité invalidante, isolement social, dépression, anxiété et même démence.

D'autres signes : Acouphènes (1/3), instabilité positionnelle…

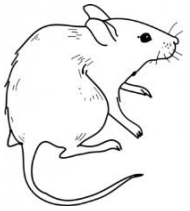
Perte de l'audition liée à l'âge

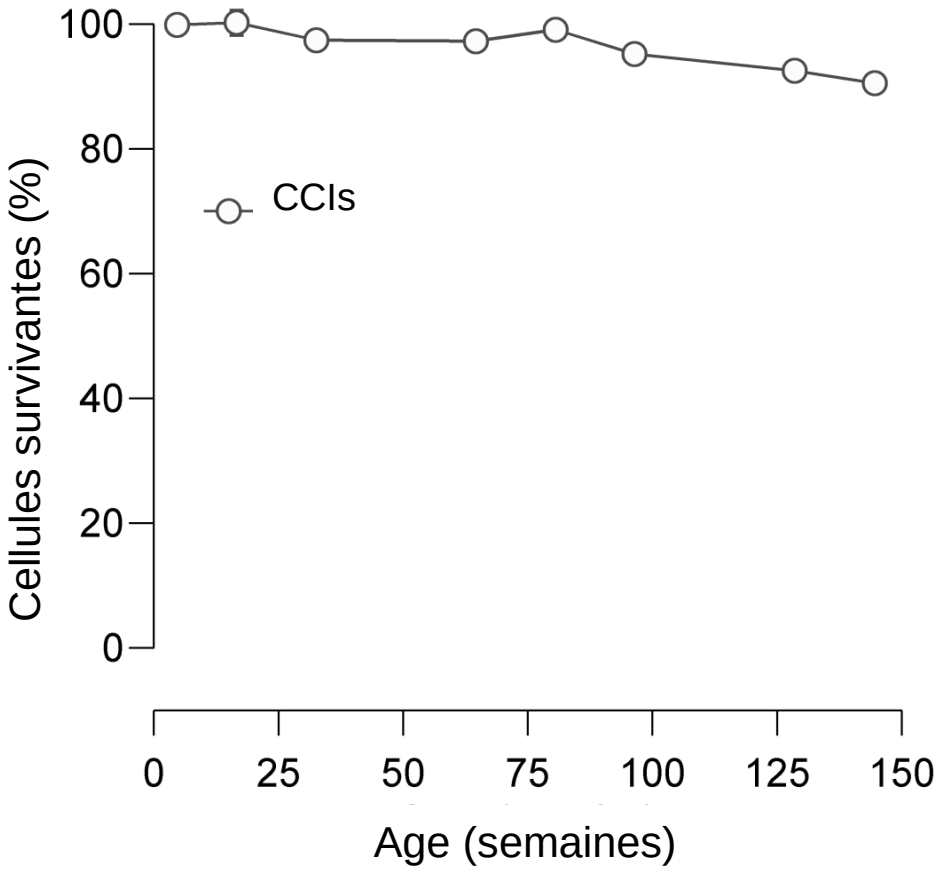
Audiométrie tonale



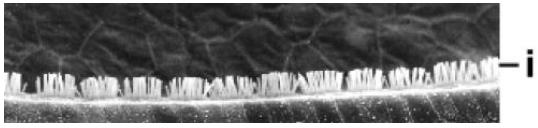
Presbyacousie

Données chez la souris

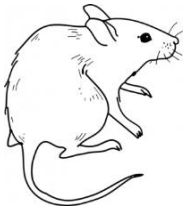


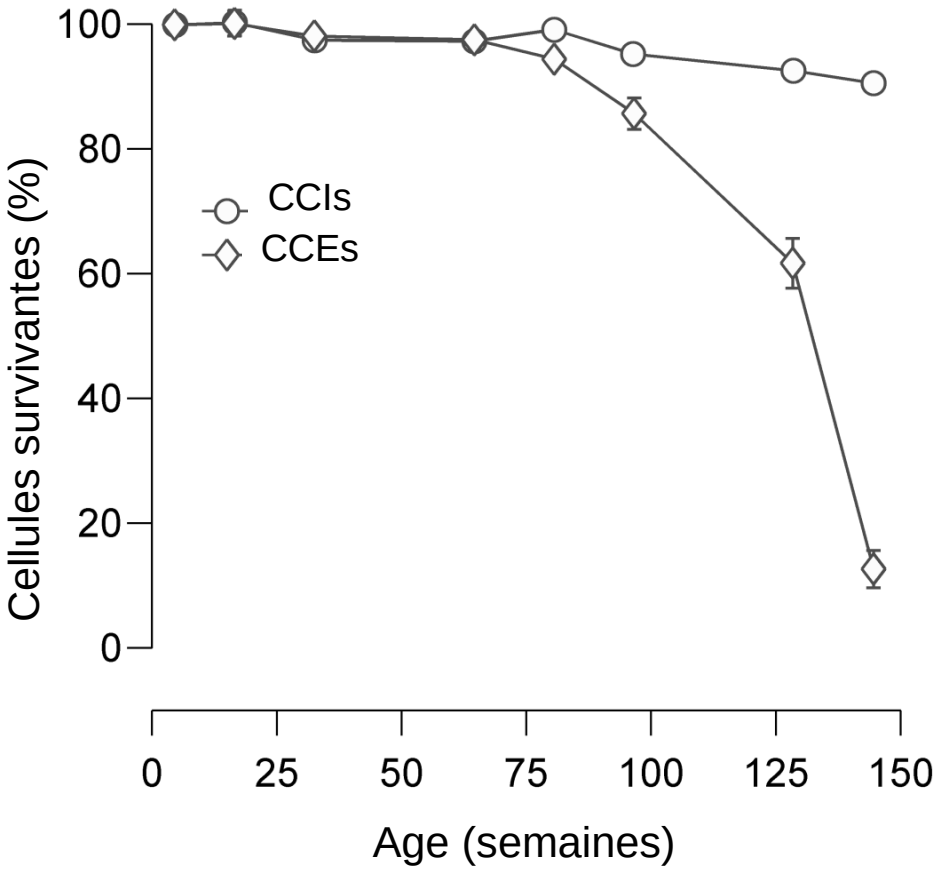


Les cellules sensorielles



Sergeyenko et al., J. Neurosci. 2013





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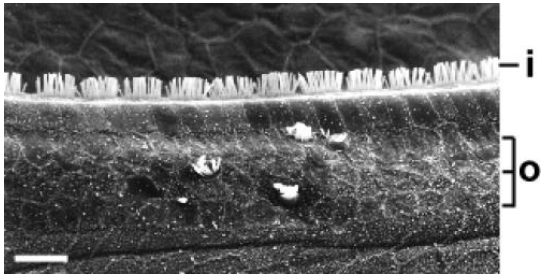

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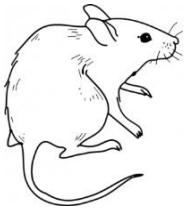

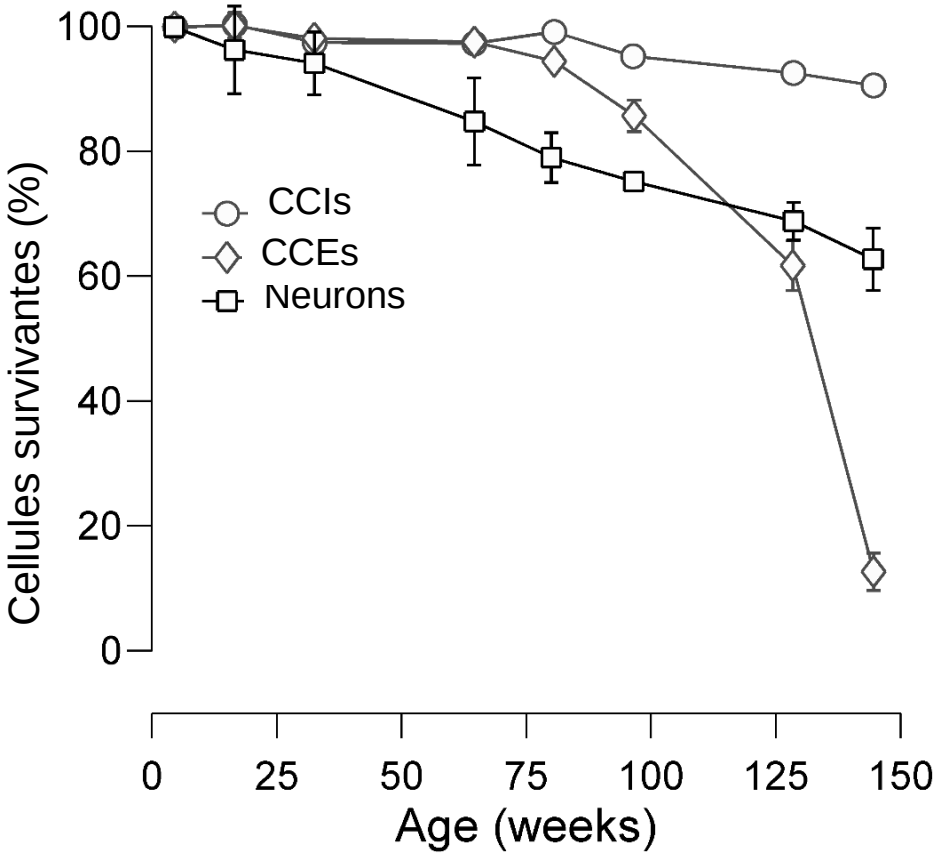

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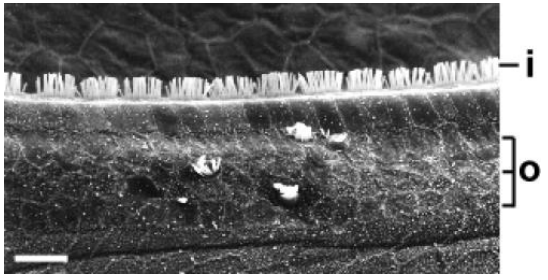
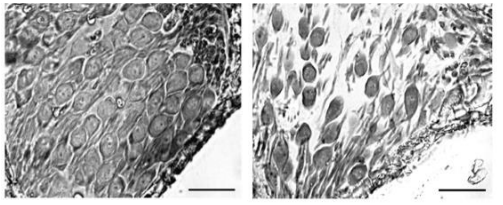


Les neurones auditifs



Sergeyenko et al., J. Neurosci. 2013

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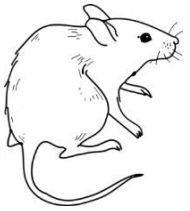

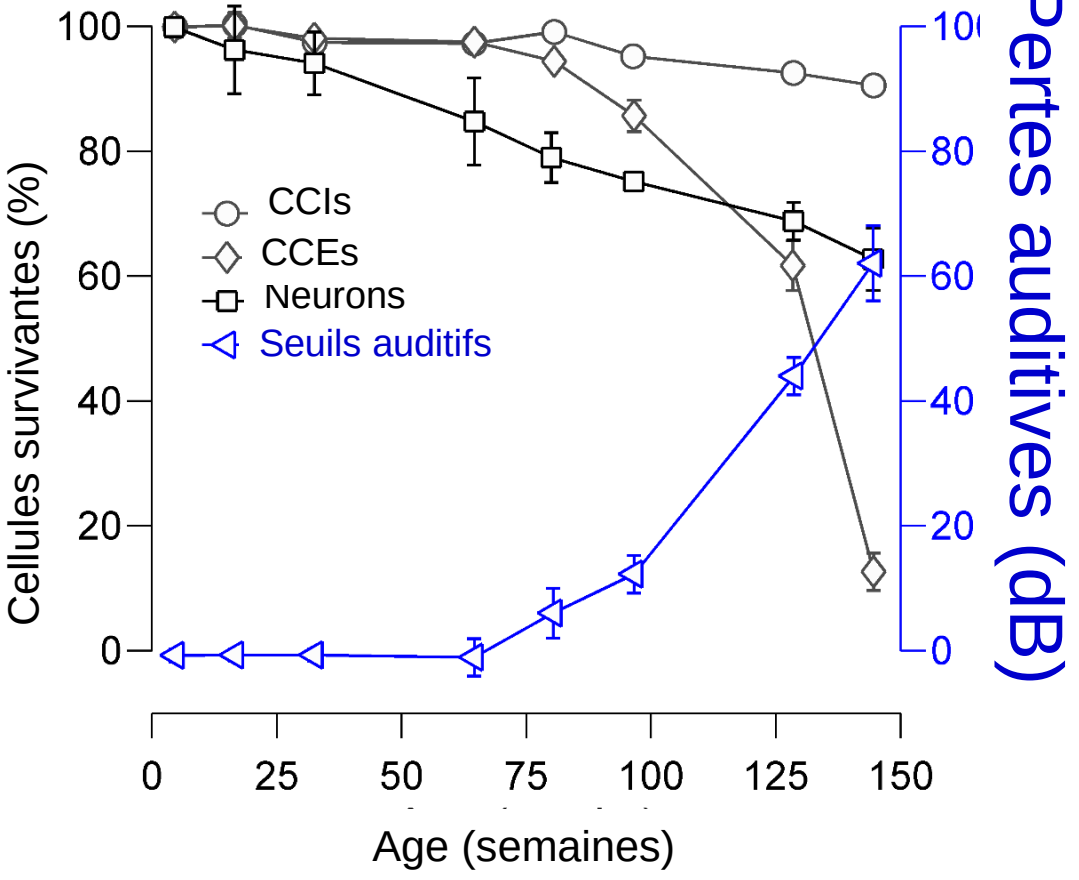

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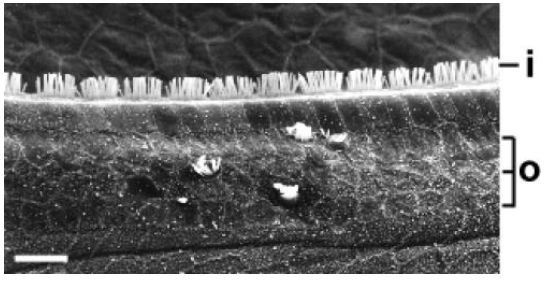

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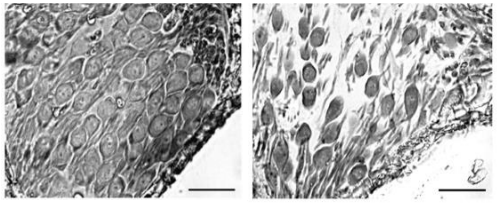
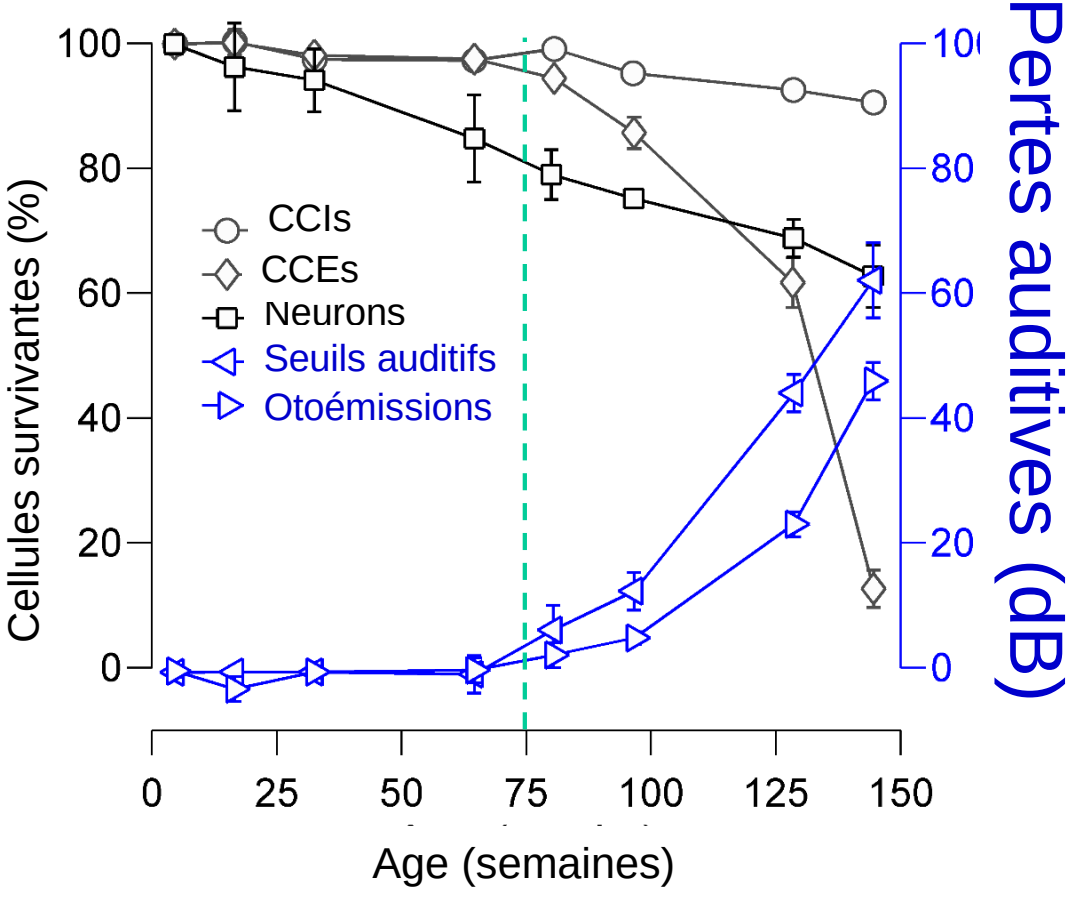


Sergeyenko et al., J. Neurosci. 2013



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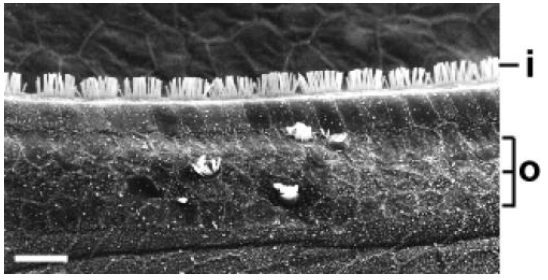

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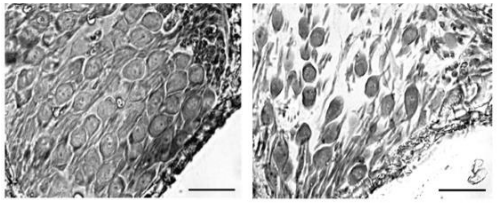

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Presbyacousie

Données chez l'homme

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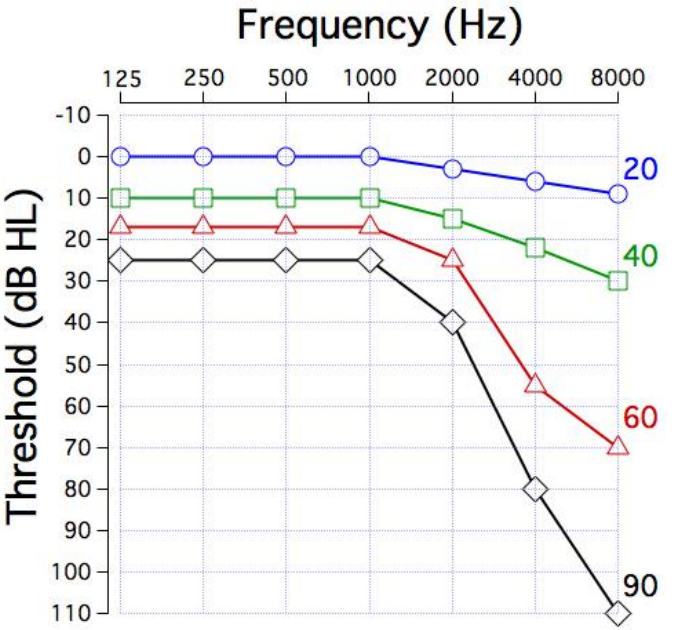
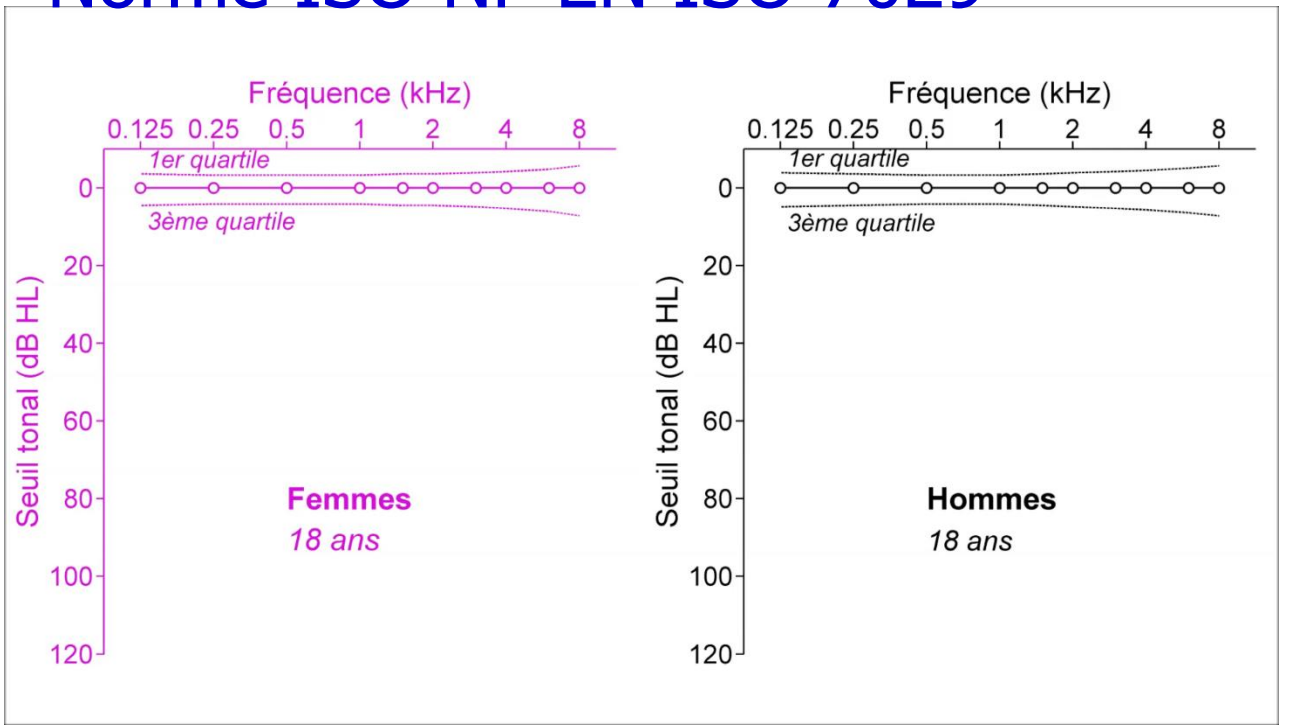
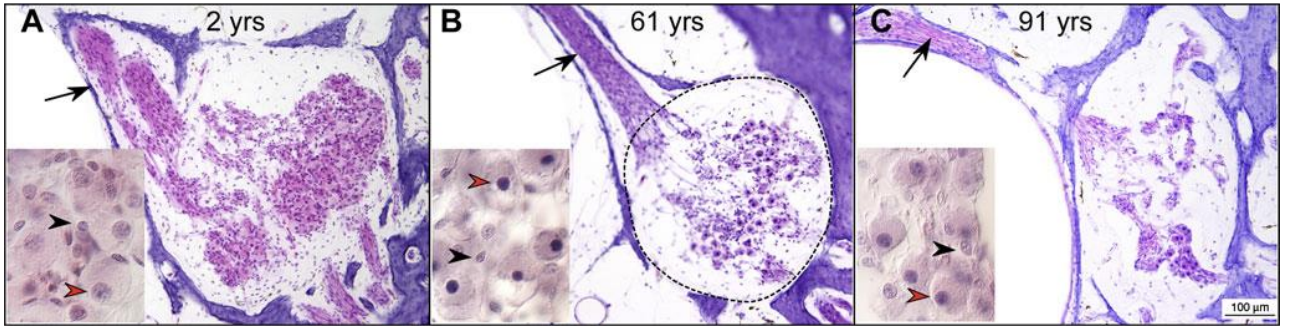
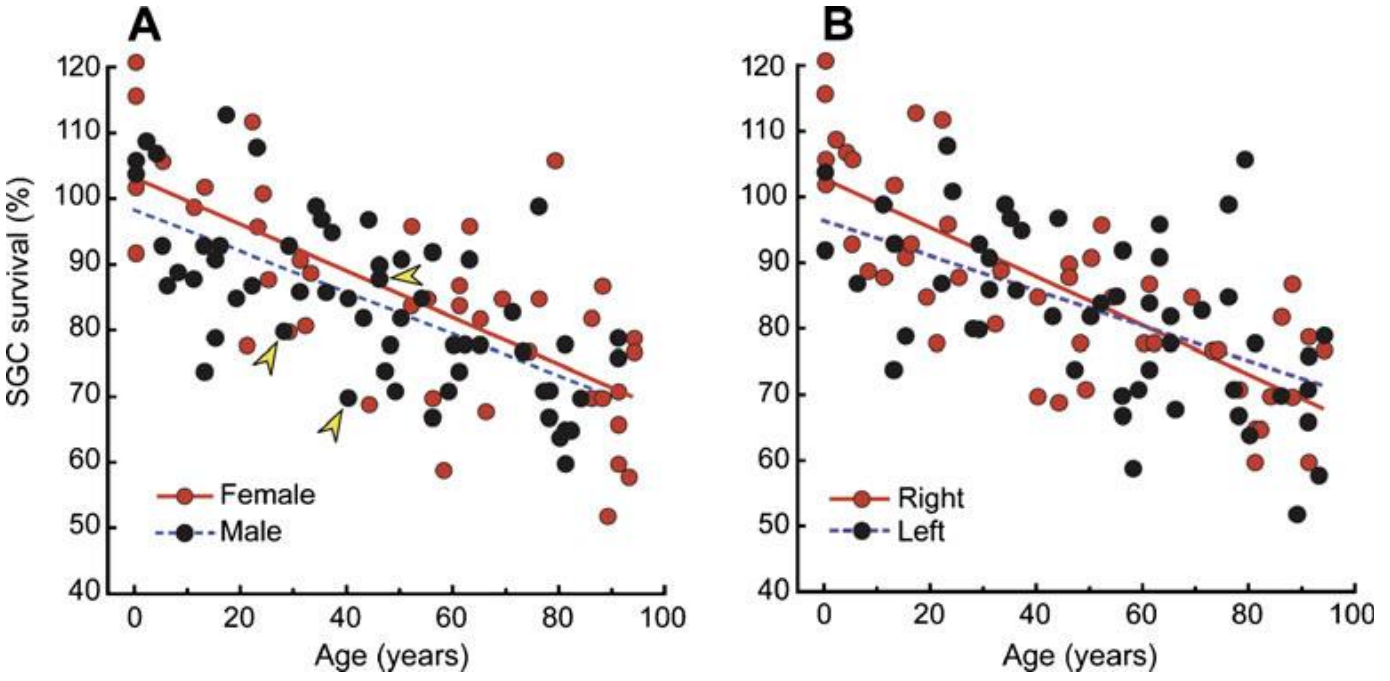


Norme ISO NF EN ISO 7029

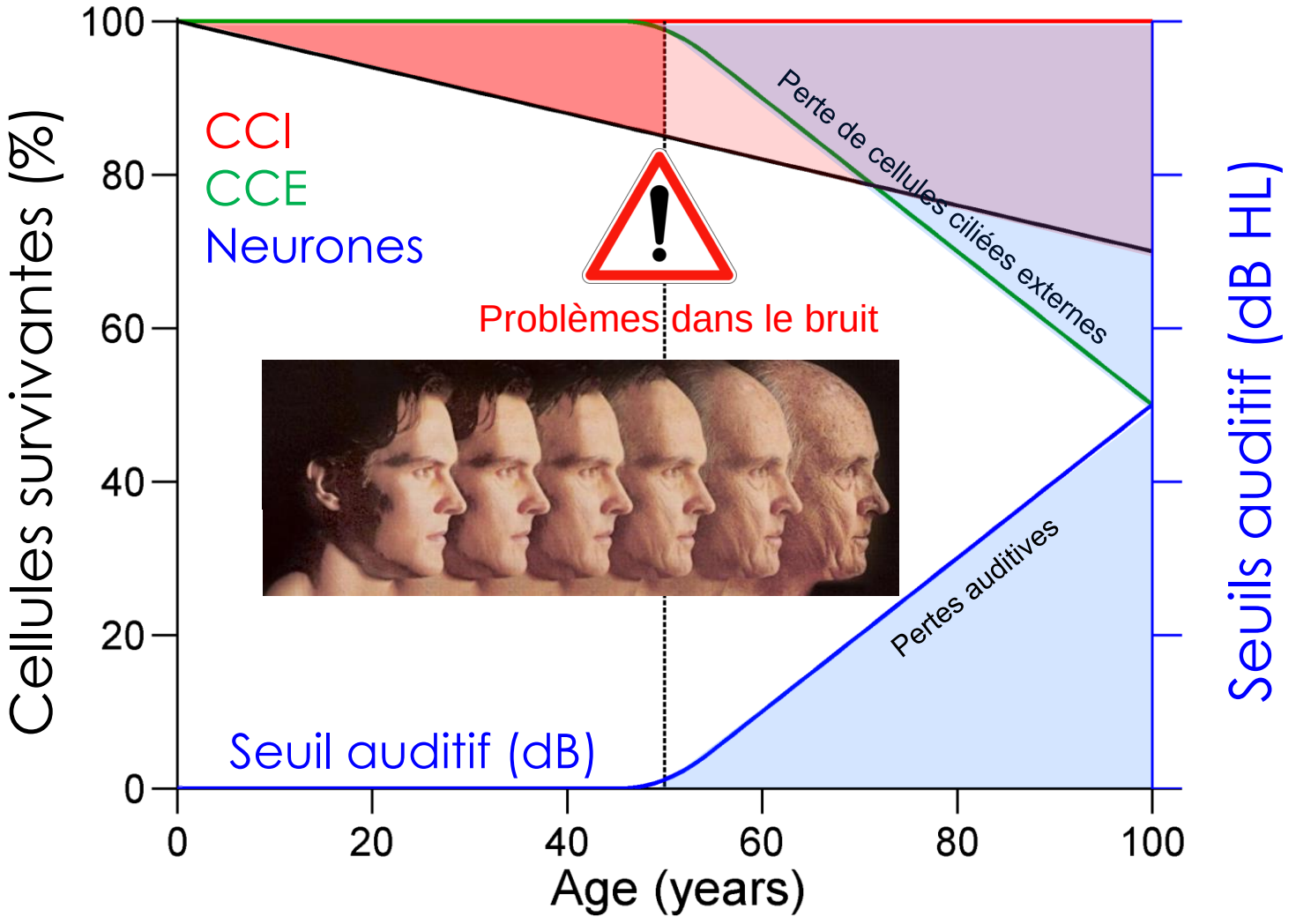






Makary et al., JARO 12: 711–717 (2011)

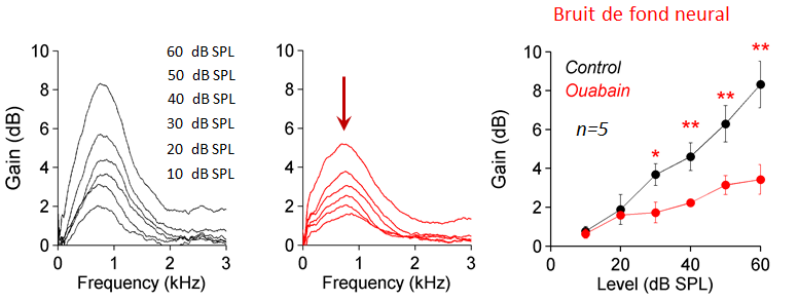
institute for neurosciences
montpellier



Que faire?

Médical

Développer de nouveaux outils diagnostiques précoces



Batrel et al., PlosOne., 2017

Recherche

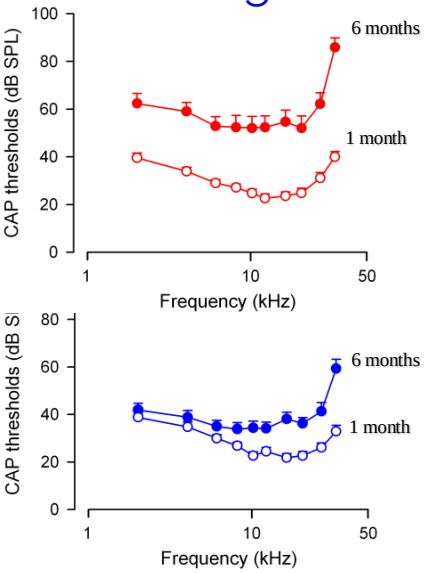
Développer des stratégies thérapeutiques adaptées

Senescence-Accelerated Prone Mouse 8 (SAMP8):

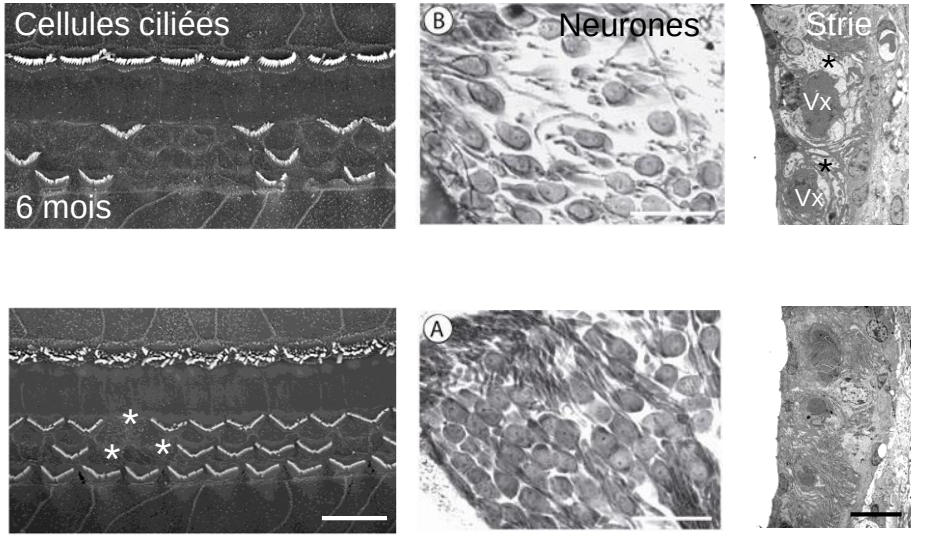
SAMP8

SAMR1

Hearing loss



Cell degeneration



Oxidative stress

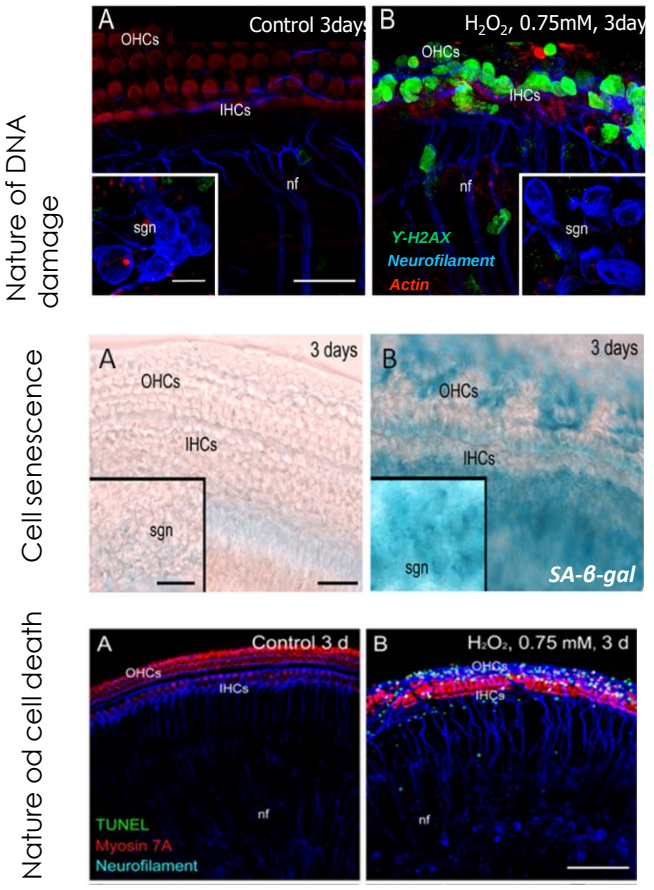
Inflammation

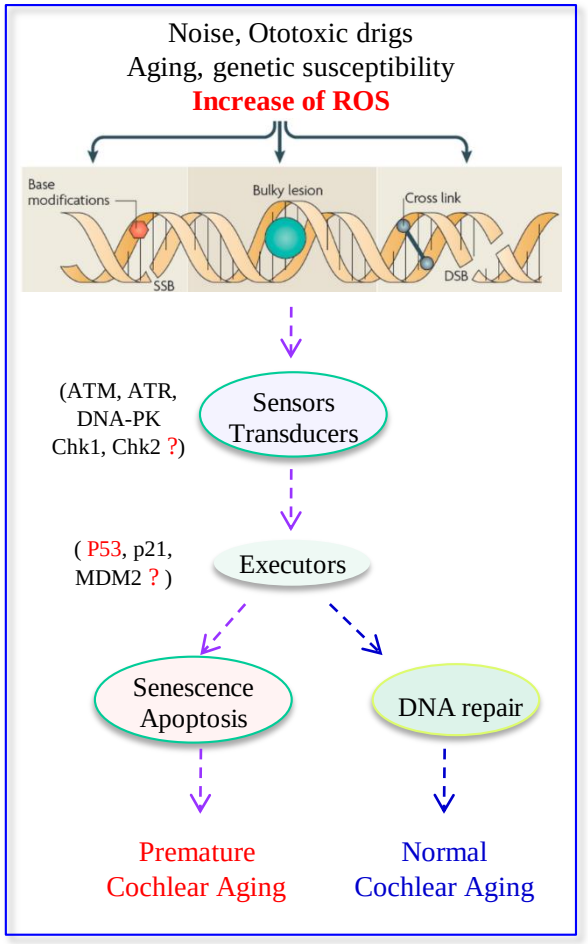
Autophagic stress

Menardo et al., **Antioxidants & Redox Signaling** 2012

Mecanismes moléculaires

Signaling pathway

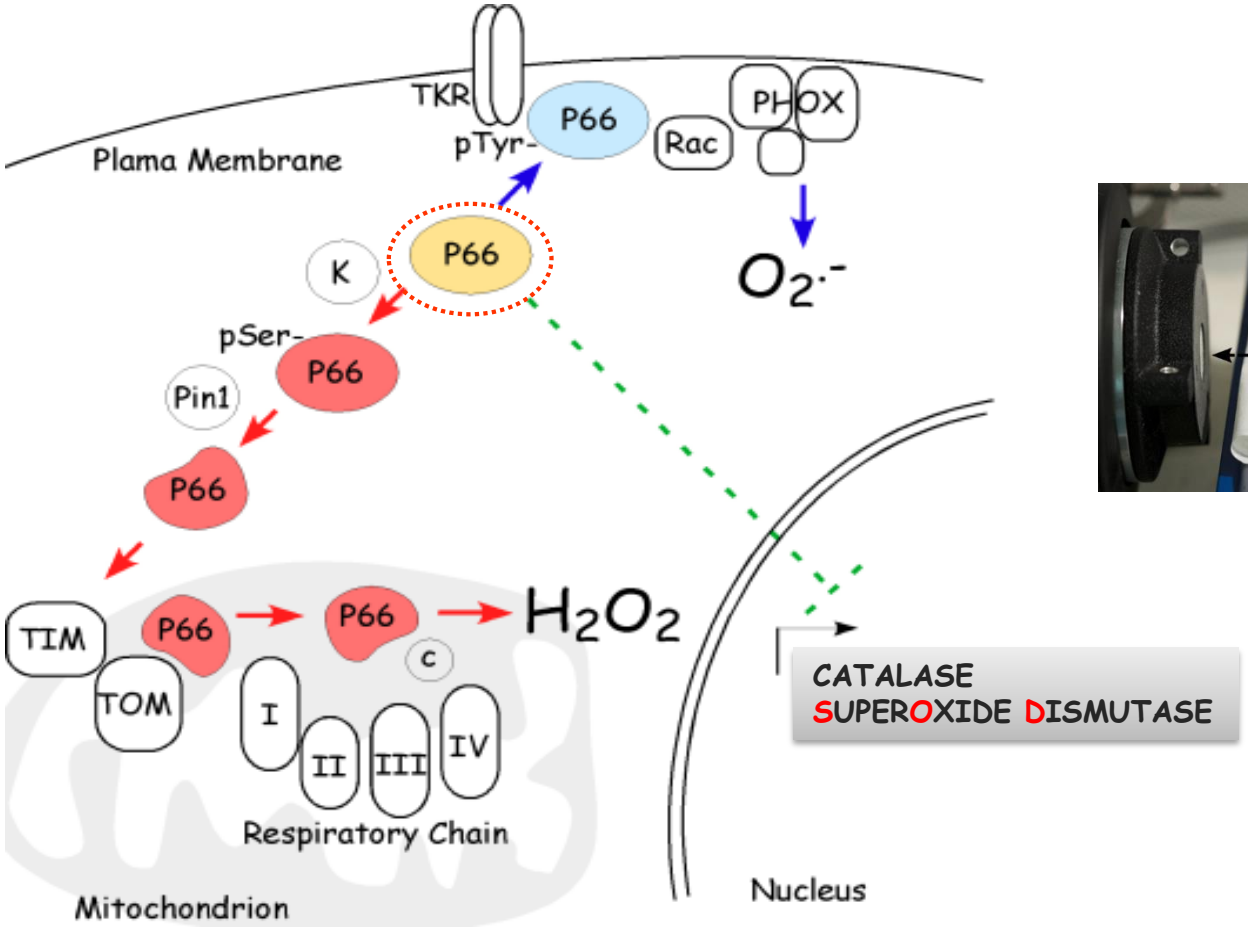




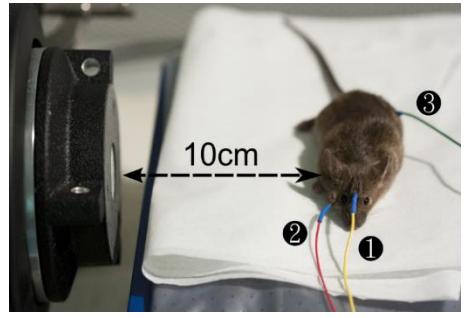
Délétion du p66^{shc}

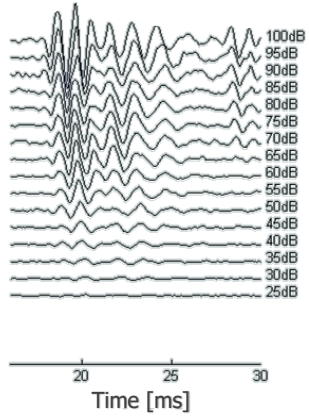
p66 KO mice
C57BL/6J Background

Oxidative stress, Ageing, Diseases

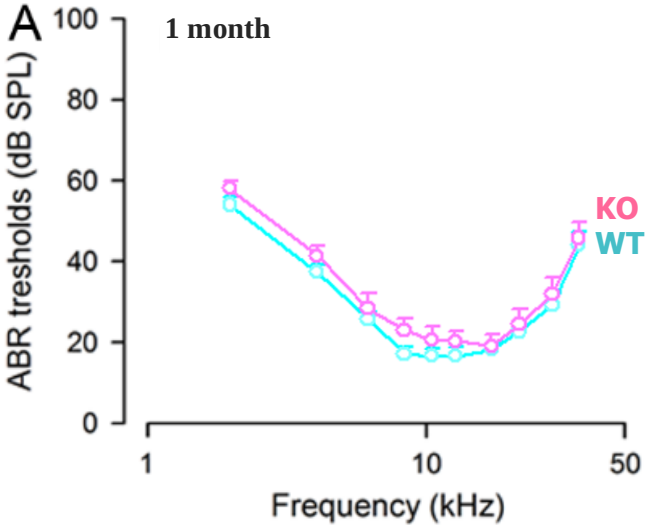


Auditory Brainstem Response

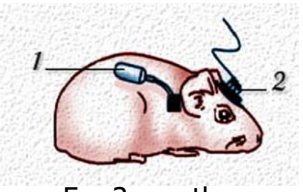




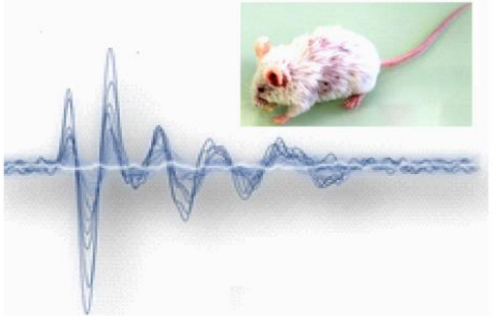
Délétion du p66^{shc} préserve l'audition



Traitements ciblés



For 3 months



6-month-old SAMP8 mice

www.cochlee.info

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Promenade autour de la Cochlée