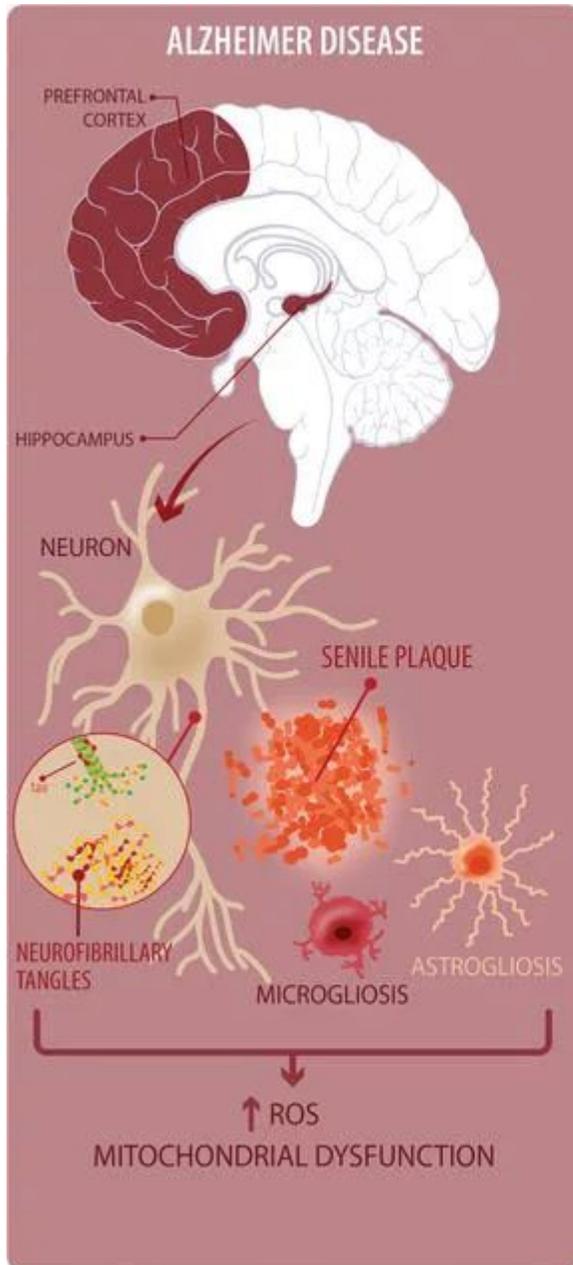


# Severe reactive astrocytes precipitate pathological hallmarks of Alzheimer's disease via $\text{H}_2\text{O}_2^-$ production

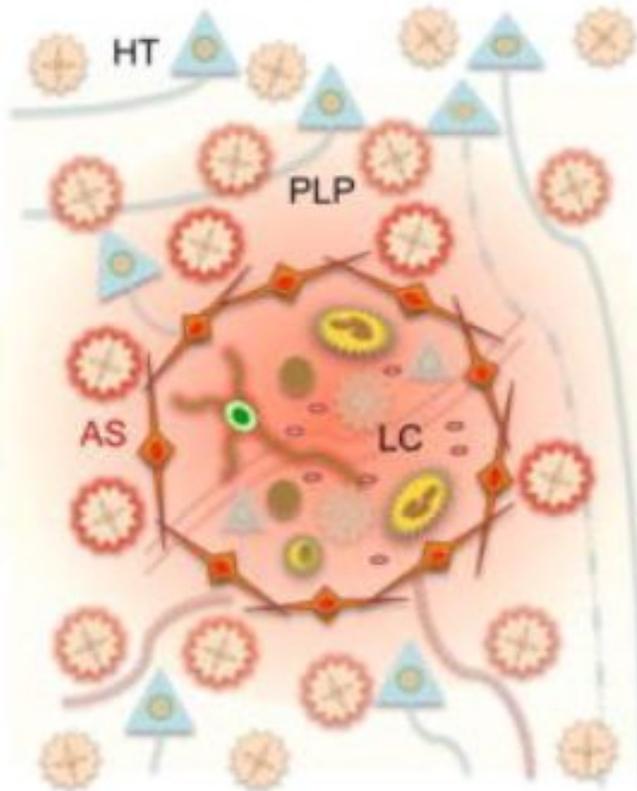
Heejung Chun <sup>1,2,3</sup>, Hyeonjoo Im<sup>3</sup>, You Jung Kang<sup>4</sup>, Yunha Kim<sup>3</sup>, Jin Hee Shin<sup>5</sup>, Woojin Won<sup>1,6</sup>, Jiwoon Lim<sup>1</sup>, Yeonha Ju<sup>1,7,8</sup>, Yongmin Mason Park<sup>1,7,8</sup>, Sunpil Kim<sup>1,6</sup>, Seung Eun Lee<sup>9</sup>, Jaekwang Lee<sup>2</sup>, Junsung Woo<sup>2</sup>, Yujin Hwang<sup>3</sup>, Hyesun Cho<sup>3,10</sup>, Seonmi Jo <sup>2,11</sup>, Jong-Hyun Park <sup>12</sup>, Daesoo Kim <sup>11</sup>, Doo Yeon Kim <sup>13</sup>, Jeong-Sun Seo<sup>10,14</sup>, Byoung Joo Gwag<sup>5</sup>, Young Soo Kim <sup>15</sup>, Ki Duk Park<sup>8,12,16</sup>, Bong-Kiun Kaang <sup>17</sup>, Hansang Cho<sup>4,18,19</sup>, Hoon Ryu <sup>3,20</sup>  and C. Justin Lee <sup>1,2,6,7</sup> 



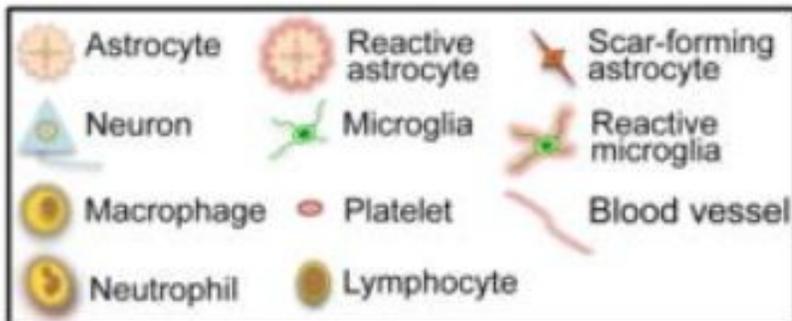
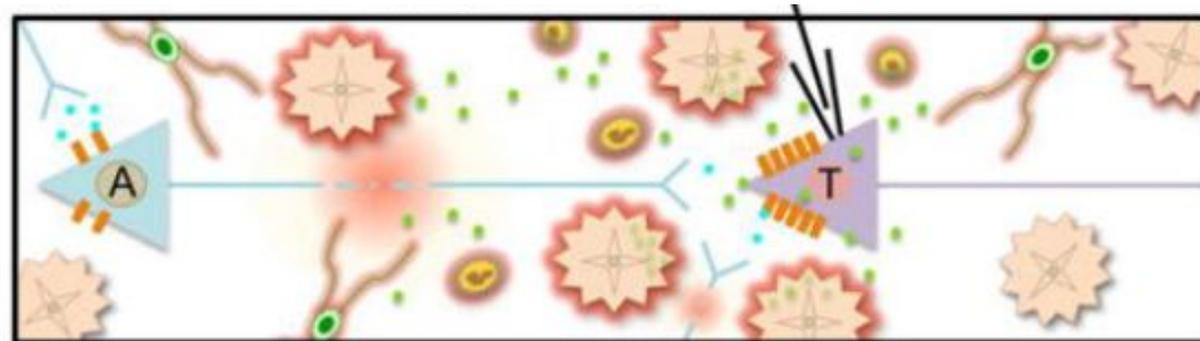
## AD:

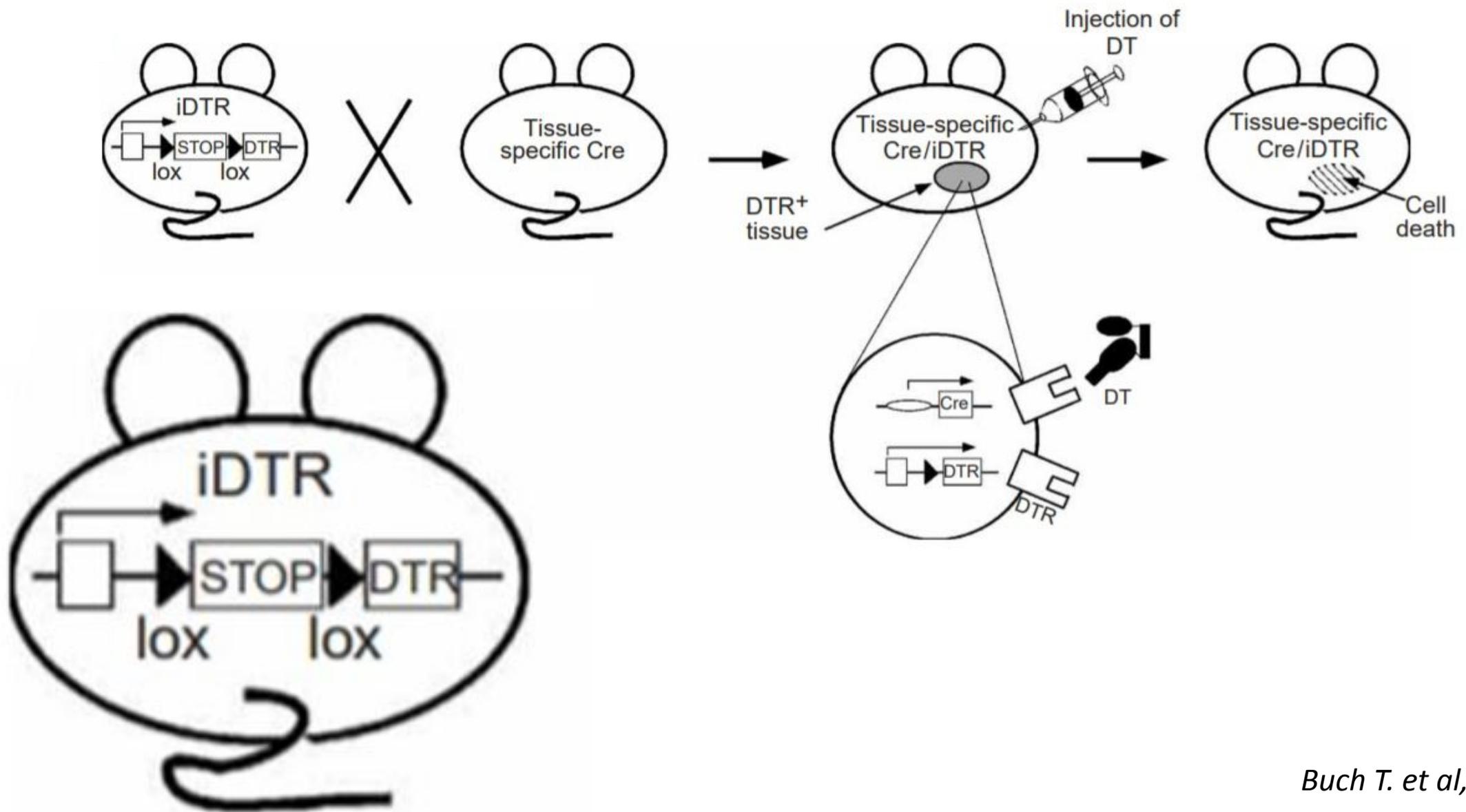
- Накопление  $\beta$ A и p-тау
- Мультиклеточный глиальный ответ;  
нейровоспаление
  - реактивный астроглиоз
  - активация микроглии
- Нейродегенерация

Focal lesion with scar formation

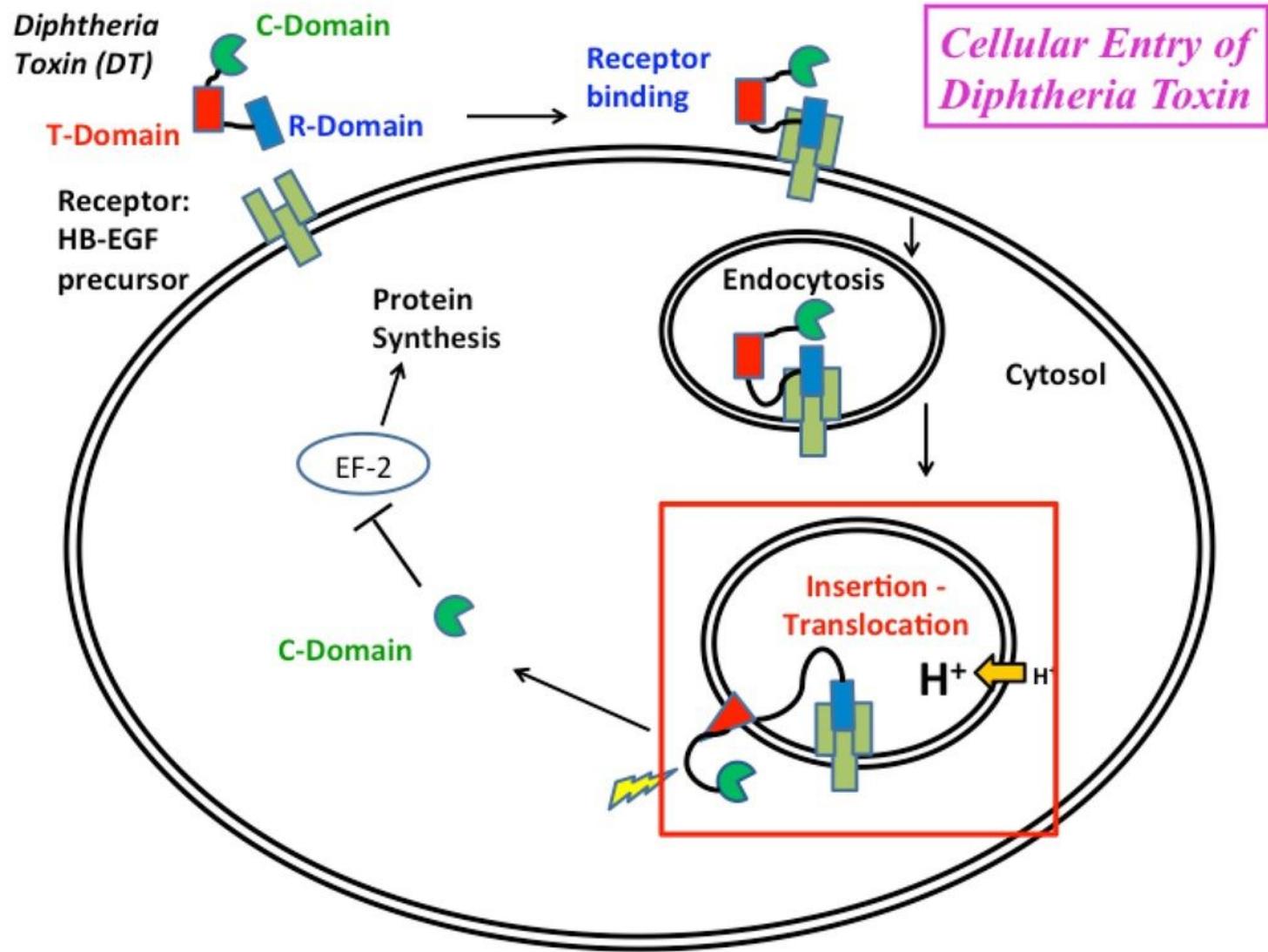


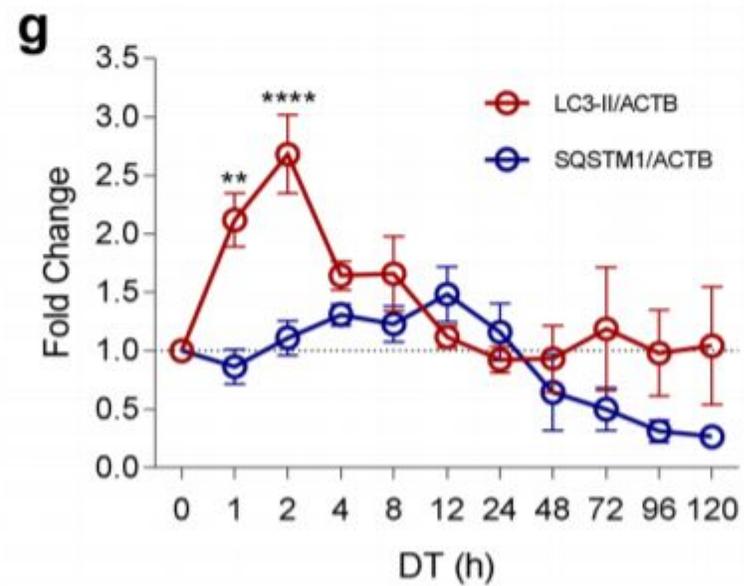
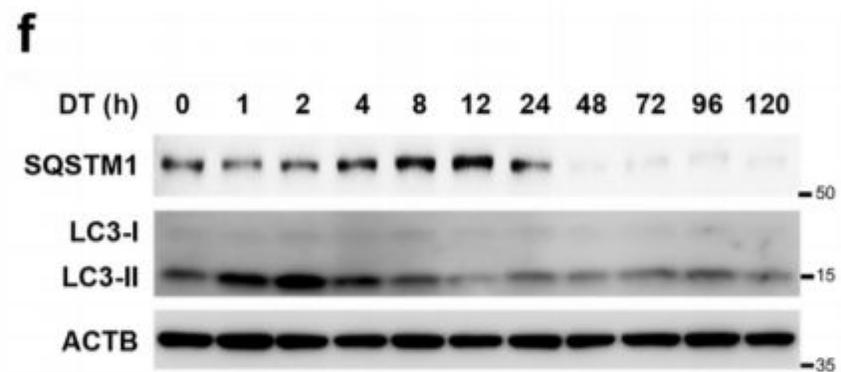
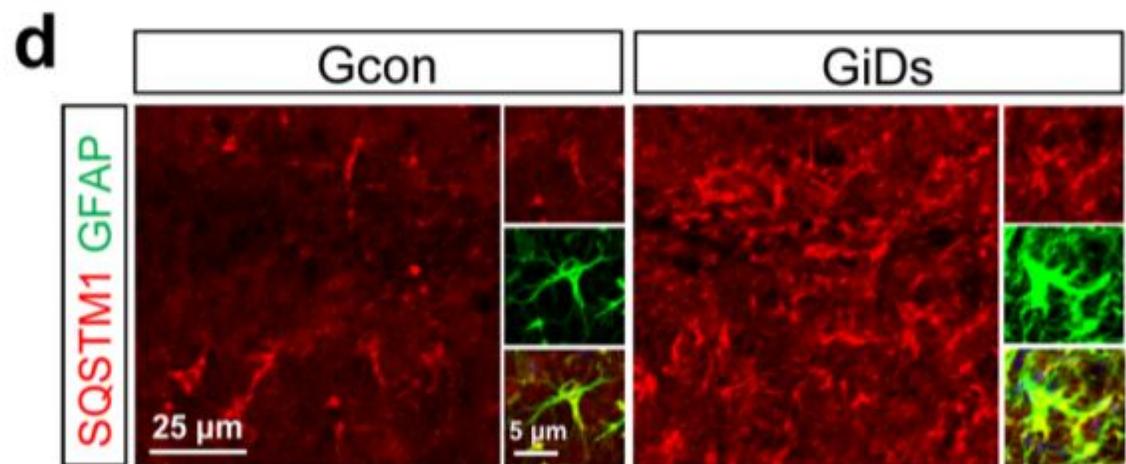
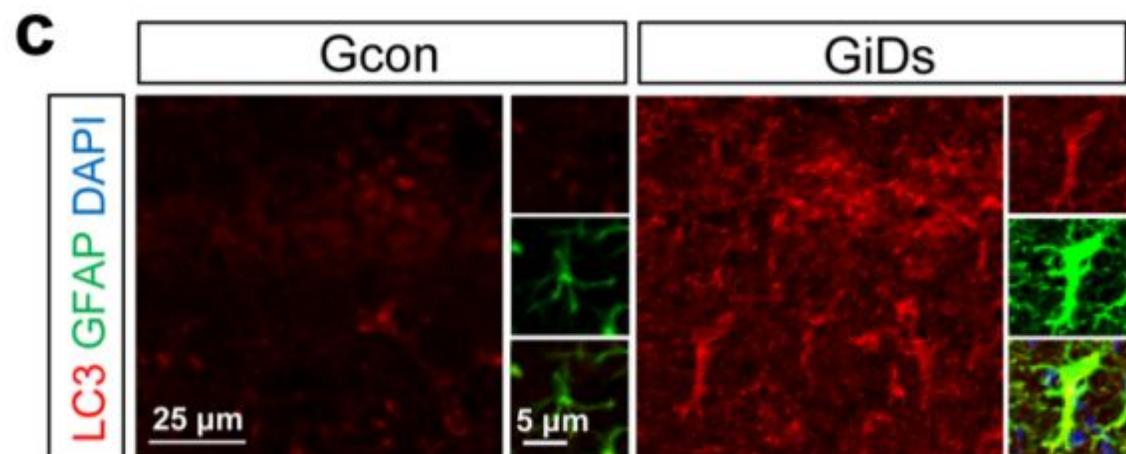
- Изоляция очага поражения
  - механический барьер
  - «химический» барьер
- Регуляция воспаления
- Регуляция проницаемости ГЭБ
- Посттравматическое ремоделирование нервной цепи
- Стимуляция регенерации



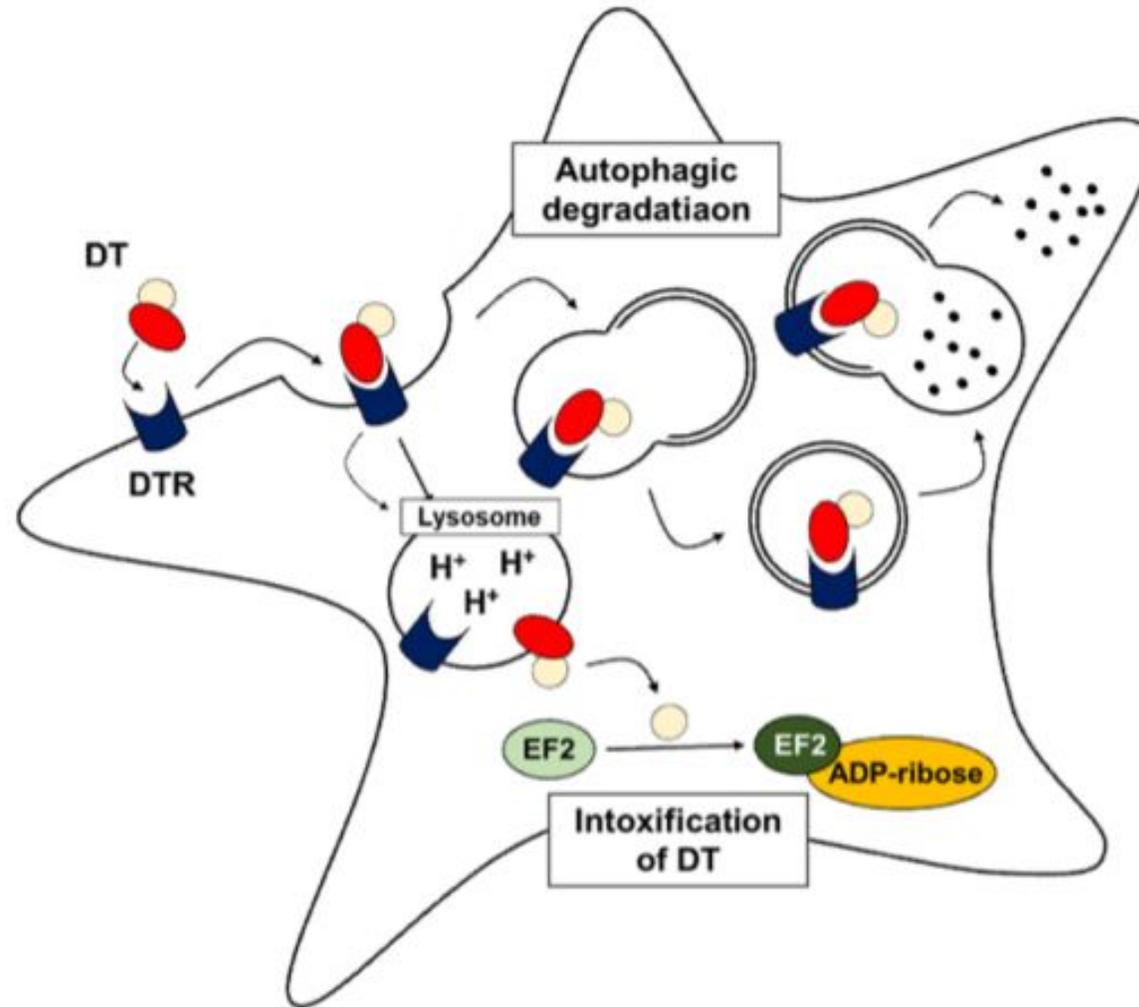


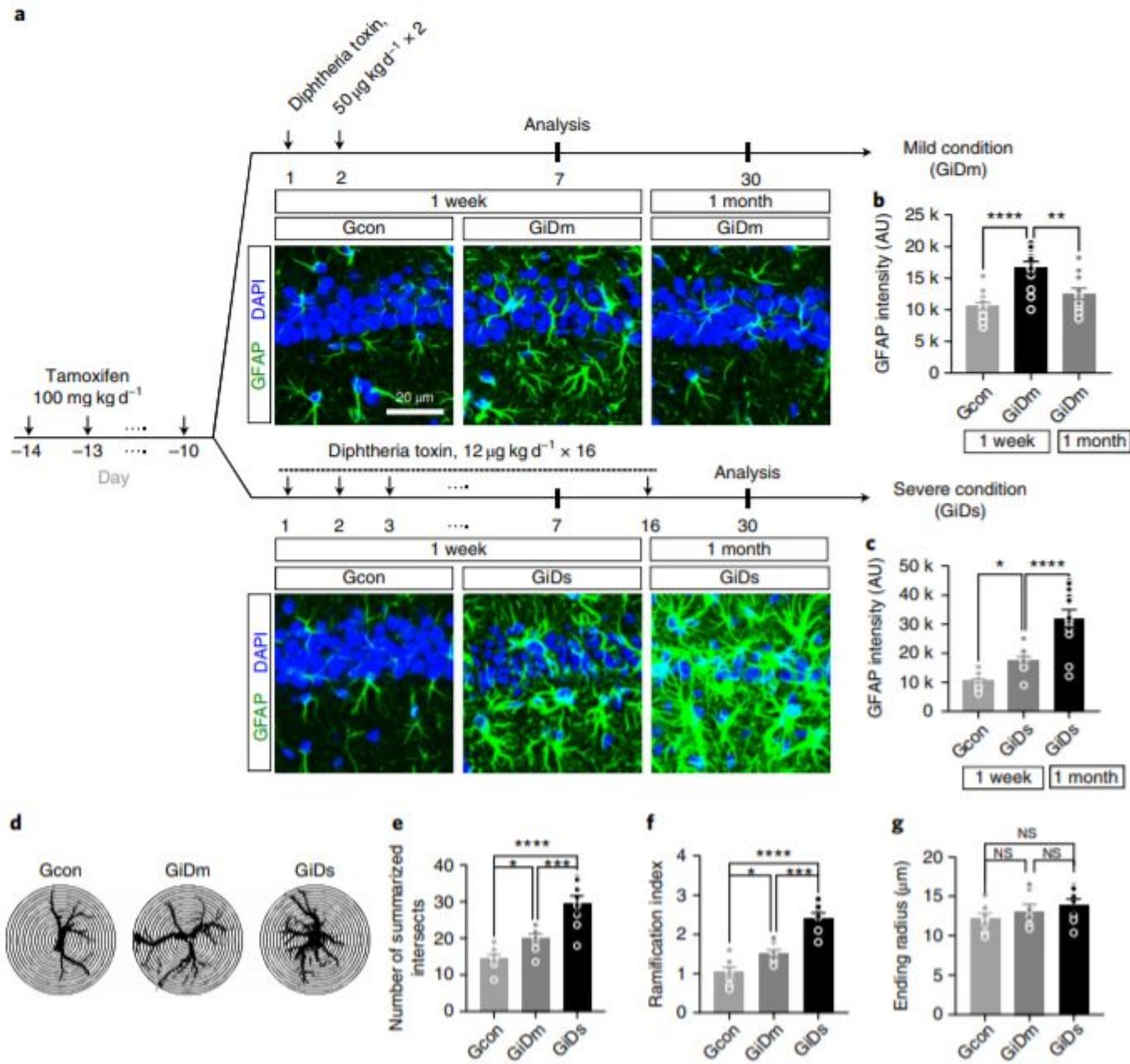
*Buch T. et al, 2005*

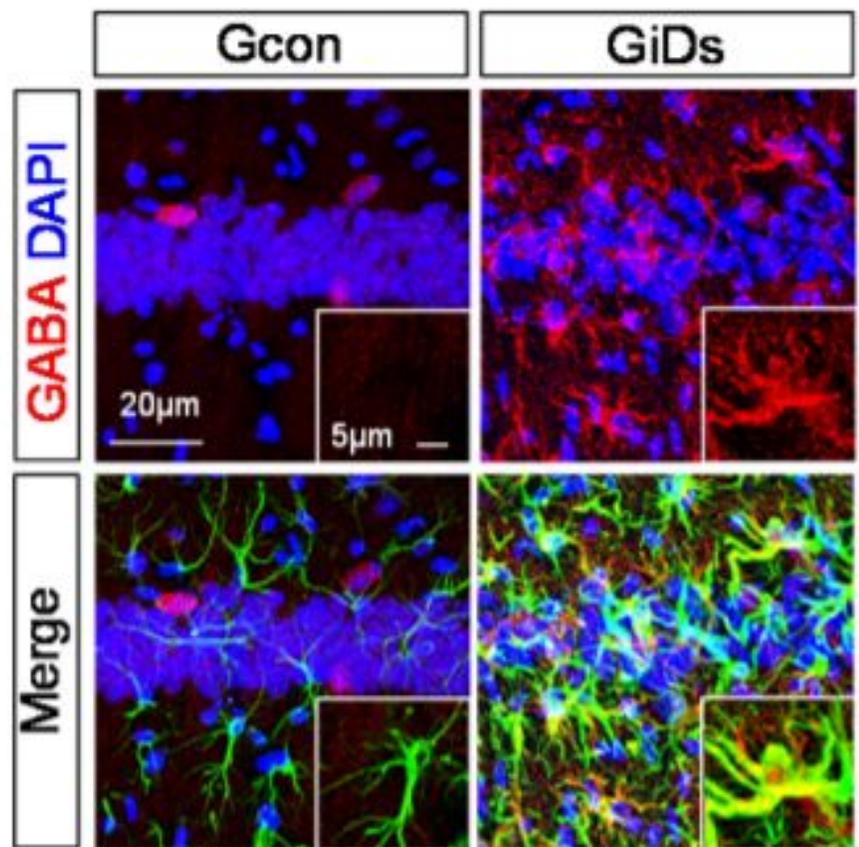




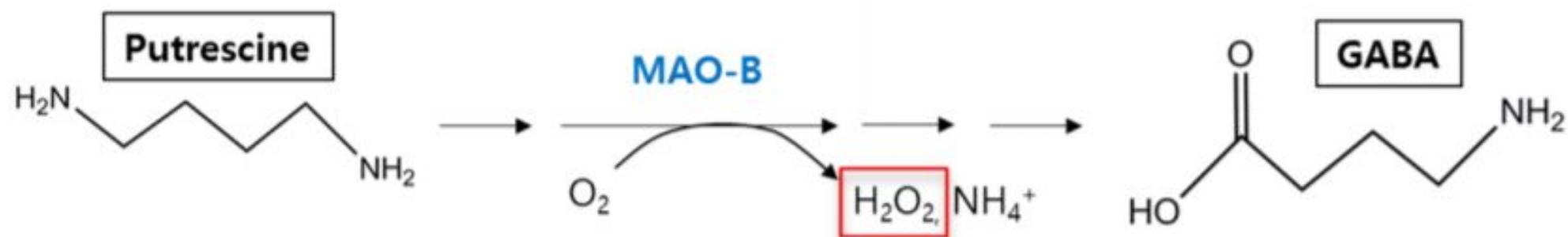
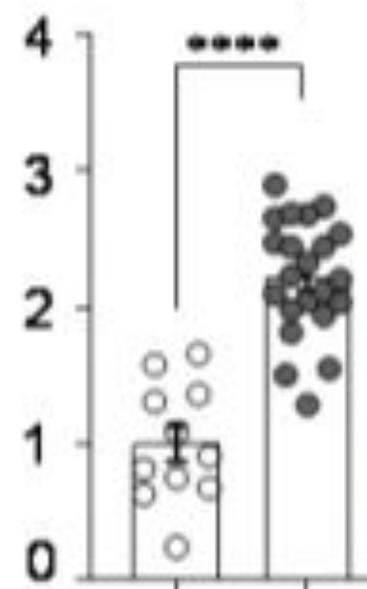
## Alternative pathways of DT actions



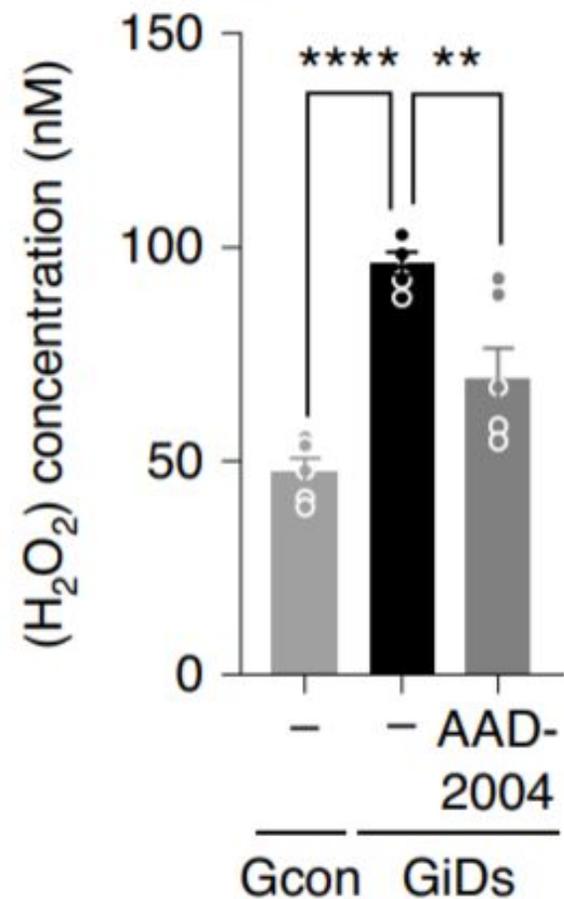
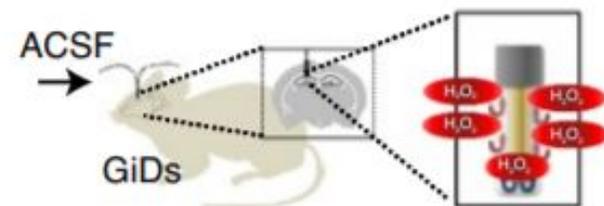
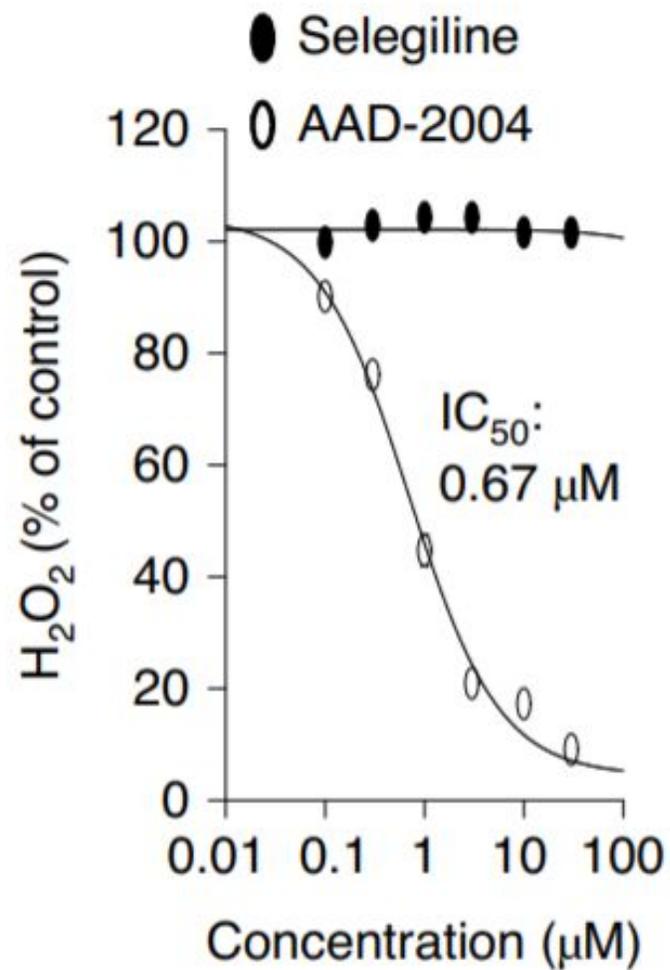
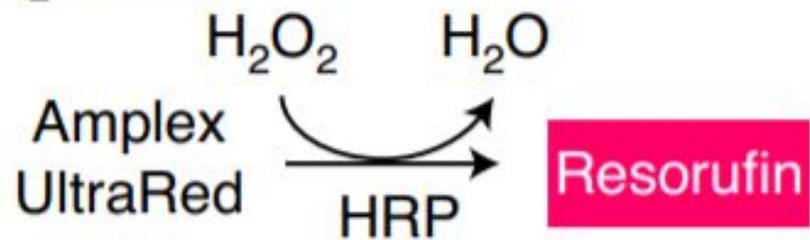


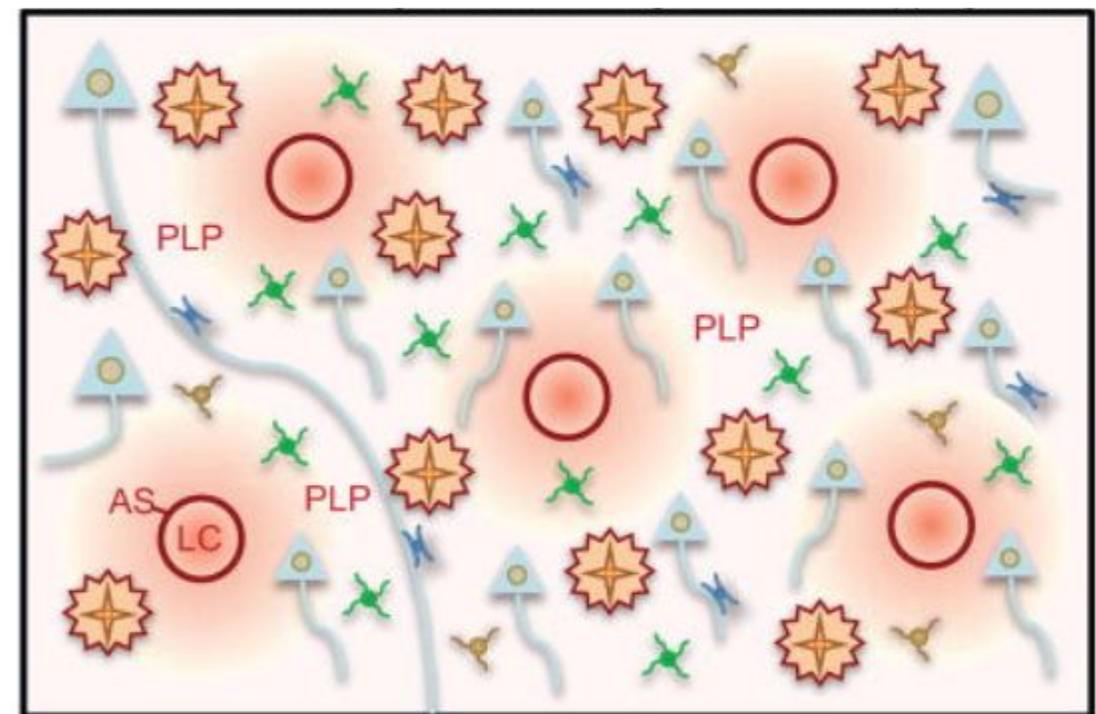
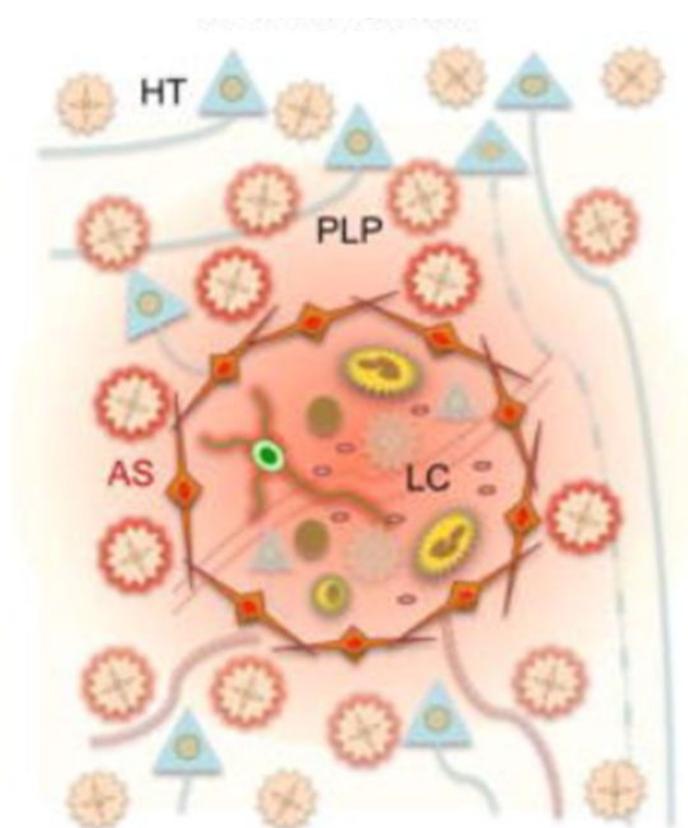


**i**  
GABA in GFAP+  
(Fold change)



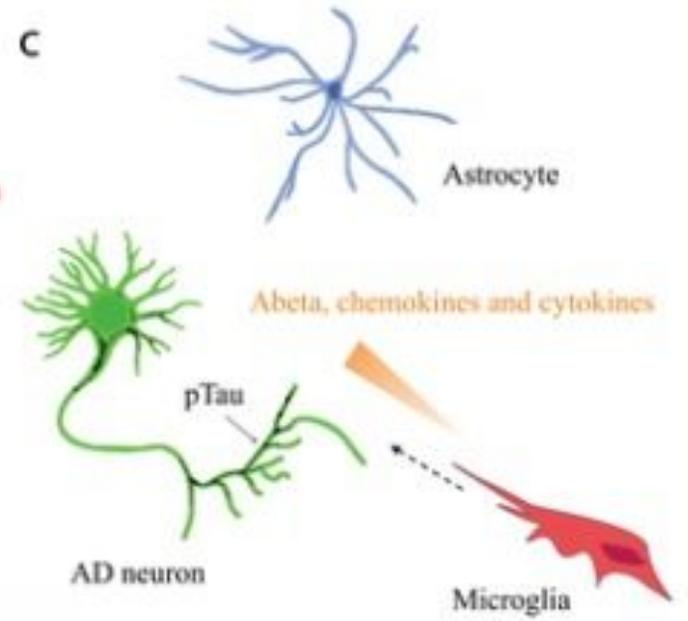
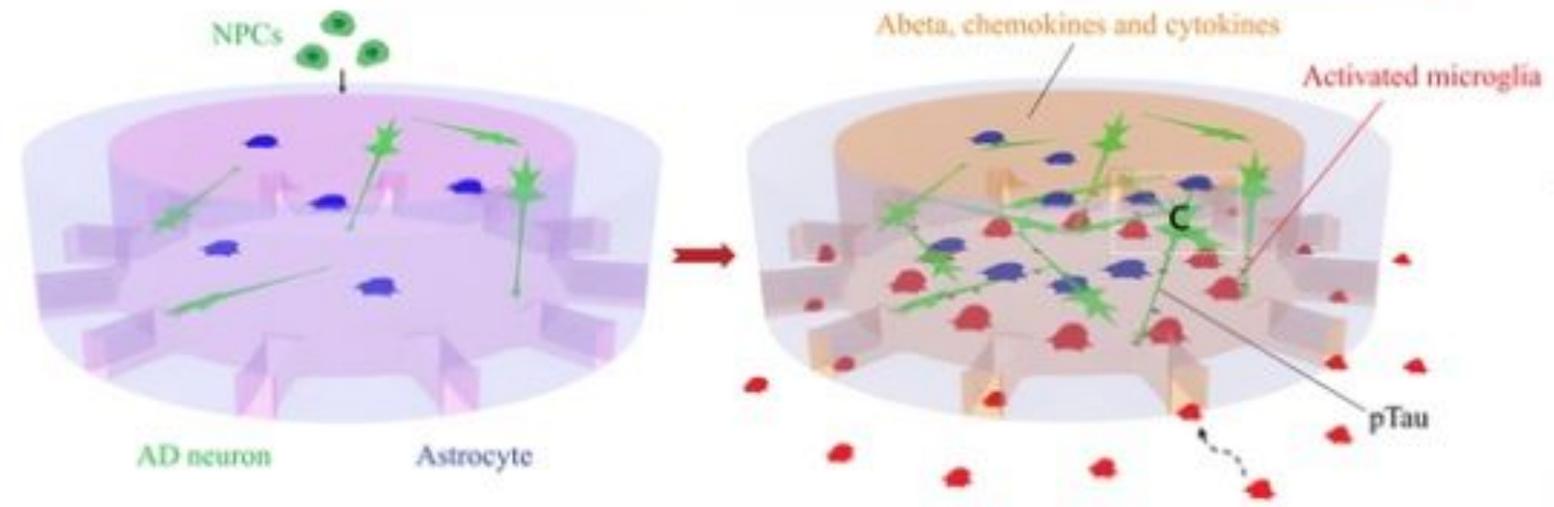
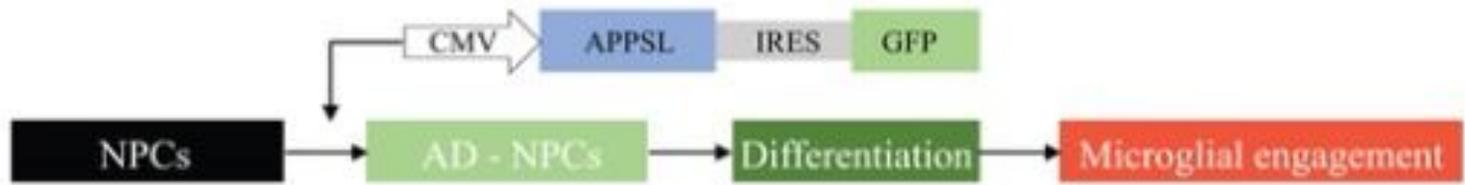
H<sub>2</sub>O<sub>2</sub> assay





	Astrocyte		Reactive astrocyte		Scar-forming astrocyte
	Neuron		Microglia		Reactive microglia
	Macrophage		Platelet		Blood vessel
	Neutrophil		Lymphocyte		

*Burda J. and Sofroniew M. 2016*



*Park J. et al, 2018*