

ALZHEIMER'S MODELS

Alzheimer's disease is characterized by both behavioral and histopathological symptoms that develop with age, and NDI offers animal models that capture these different aspects. Especially comprehensive are two naturally occurring aged-animal models that exhibit AD-like cognitive, non-cognitive, as well as histopathological symptoms.

AGED BEAGLES

Background

- Beagles develop beta amyloid accumulations, starting around 8 years of age.
- The predominant form of beta amyloid is the 42-peptide molecule, which is also the predominant form in humans.
- Beta amyloid also accumulates in the vascular system.
- Development of beta amyloid is structure specific, starting first in prefrontal cortex.
- A β deposition increases progressively. By 11 years of age, over 80 percent of these animals have A β deposition in prefrontal and entorhinal cortex.

Behavior testing (Cognition)

- Acquisition of a visuospatial memory task shows progressive deterioration with age (Delayed-Non-Matching to Position Task).
- Allocentric spatial ability decreases with age (Landmark Discrimination Task).
- Control tests are procedural learning and egocentric spatial learning tasks, which show little age sensitivity.
- Complex discrimination learning and reversal learning tasks are also age sensitive (Oddity Task and Discrimination Reversal Tasks).

Behavior testing (Non- Cognitive Behaviors)

- General activity is lessened (Open Field Test).
- Specific exploratory behavior is diminished (Curiosity Task).
- Social behavior is reduced (Human Interaction Task).
- Sleep-Wakefulness rhythms are disrupted.

Neuropathological Assessment

- Immunohistochemical staining for beta amyloid deposition
- Counts of apoptotic neurons
- Measurement of brain volume (MRI)