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Abstract	<p>Alzheimer's disease is a neurodegenerative disorder that is characterized by the cerebral deposition of amyloid fibrils formed by Abeta peptide. Despite their prevalence in Alzheimer's and other neurodegenerative diseases, important details of the structure of amyloid fibrils remain unknown. Here, we present a three-dimensional structure of a mature amyloid fibril formed by Abeta(1-40) peptide, determined by electron cryomicroscopy at approximately 8-Å resolution. The fibril consists of two protofilaments, each containing approximately 5-nm-long regions of beta-sheet structure. A local twofold symmetry within each region suggests that pairs of beta-sheets are formed from equivalent parts of two Abeta(1-40) peptides contained in each protofilament. The pairing occurs via tightly packed interfaces, reminiscent of recently reported steric zipper structures. However, unlike these previous structures, the beta-sheet pairing is observed within an amyloid fibril and includes significantly longer amino acid sequences.</p>
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