一．ADNI 图像数据介绍（Image Collection）

(1) 最初的五年研究 (ADNI-1) 在 2009 年通过大机会补助金 (ADNI-GO) 延长两年，并在 2011 和 2016 年通过进一步竞争性续签 ADNI-1 补助金 (ADNI-2，和 ADNI-3)。在下表中了解有关研究每个阶段的更多信息。
在研究的每个阶段都在北美招募新参与者，并同意完成各种成像和临床评估。随着时间的推移，参与者被跟踪和重新评估，以跟踪疾病进展的病理。

STUDY CHARACTERISTICS	ADNI-1	ADNI-GO (Grand Opportunities)	ADNI-2	ADNI-3
Primary goal	Develop biomarkers as outcome measures for clinical trials	Examine biomarkers in earlier stages of disease	Develop biomarkers as predictors of cognitive decline, and as outcome measures	Study the use of tau PET and functional imaging techniques in clinical trials
Funding	$40 million federal (NIA), $27 million industry and foundation	$24 million American Recovery Act funds	$40 million federal (NIA), $27 million industry and foundation	$ 40 million federal (NIA), up to $20 million industry and foundation
Duration/start date	5 years/October 2004	2 years/September 2009	5 years/September 2011	5 years/September 2016
Cohort	200 elderly controls 400 MCI 200 AD	Existing ADNI-1 + 200 early MCI	Existing ADNI-1 and ADNI-GO + 150 elderly controls100 early MCI 150 late MCI 150 AD	Existing ADNI-1, ADNI-GO, ADNI-2 + 133 elderly controls 151 MCI 87 AD

(2) ADNI Research group:

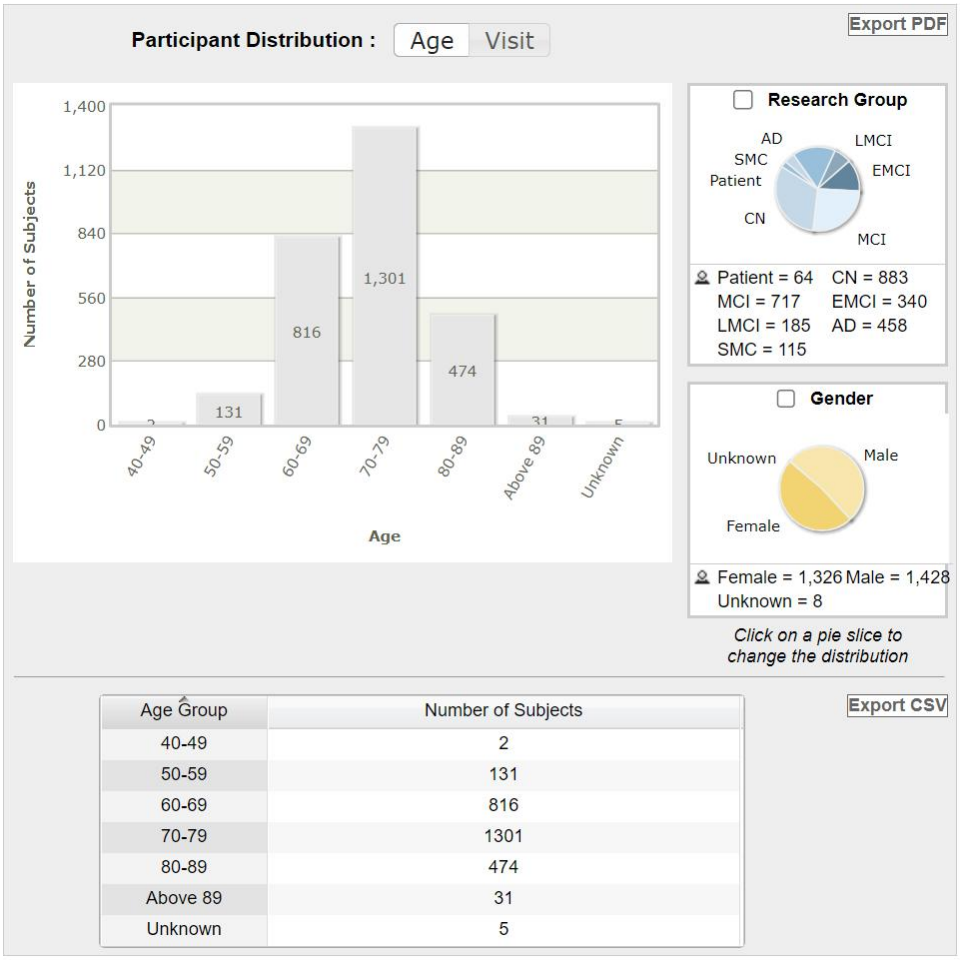
ADNI Participant Stages across ADNI 1/GO/2

CN	**Normal Aging /Cognitively Normal**	ADNI 1/GO/2	CN participants are the control subjects in the ADNI study. They show no signs of depression, mild cognitive impairment or dementia.
SMC	**Significant Memory Concern**	ADNI 2	SMC participants score within normal range for cognition (or CDR = 0) but indicate that they have a concern, and exhibit slight forgetfulness. The informant does not equate this as progressive memory impairment nor considers this as consistent forgetfulness.
EMCI	**Early Mild Cognitive Impairment**	ADNI GO/2	MCI participants have reported a subjective memory concern either autonomously or via an informant or clinician. However, there are no significant levels of impairment in other cognitive domains, essentially preserved activities of daily living and there are no signs of dementia. Levels of MCI (early or late) are determined using the Wechsler Memory Scale Logical Memory II.
MCI	**Mild Cognitive Impairment**	ADNI 1	
LMCI	**Impairment**	ADNI GO/2	
AD	**Alzheimer's disease**	ADNI 1/GO/2	AD participants have been evaluated and meet the NINCDS/ADRDA criteria for probable AD.

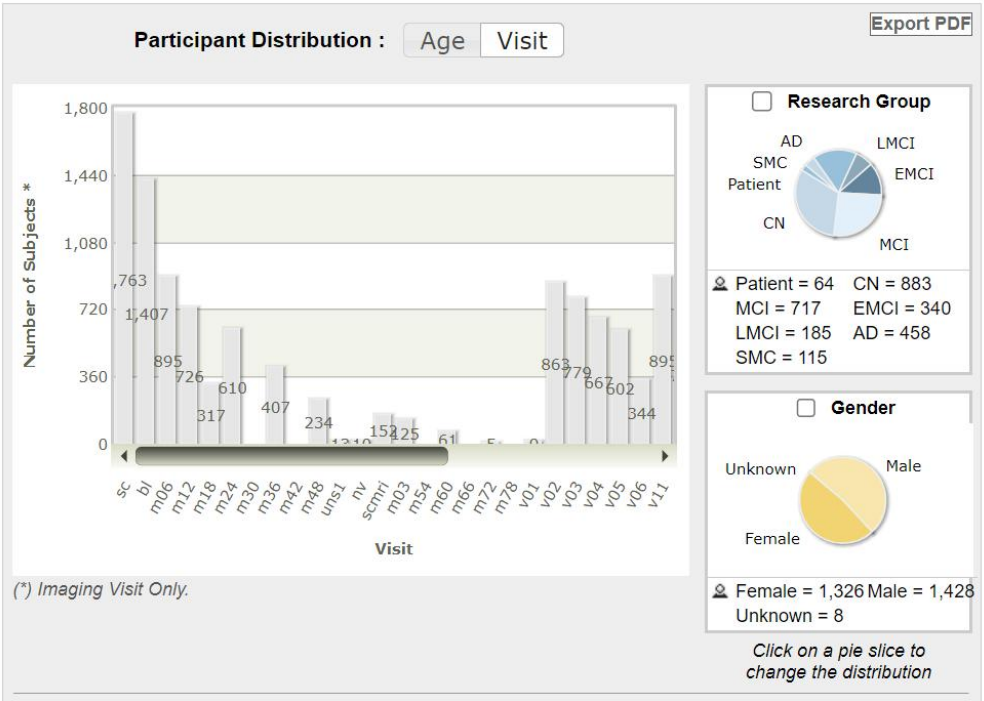
在下载图像时可以下载对应的标签信息，其中包括图像编号，患者 id，research group type (i.e. 患病阶段)，年龄，性别等数据。
其中共有 DTI, MRI, PET, fMRI 四种图像格式可供下载

1.5T Scans = 4200 -- 3T Scans = 1050 Total MRI scans performed for ADNI trial: 5250

二、 图像数据集下载



Age Group	Number of Subjects
40-49	2
50-59	131
60-69	816
70-79	1301
80-89	474
Above 89	31
Unknown	5

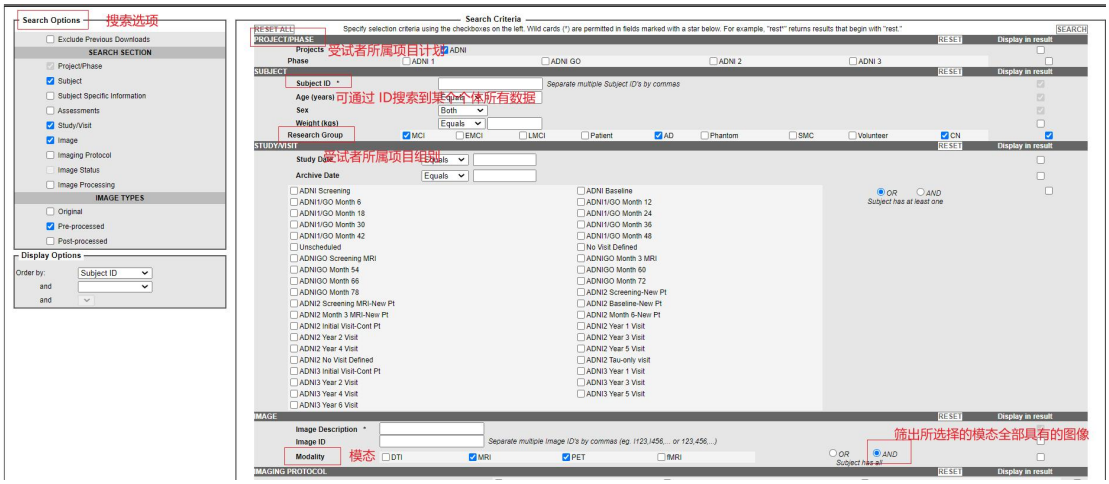


首先通过 search 页面统览，发现共有大约 11 万张图片（all research groups）

112337 image sets match your criteria: *Research Group = All; Sex = Both; Modality = MRI;*

Image count = All

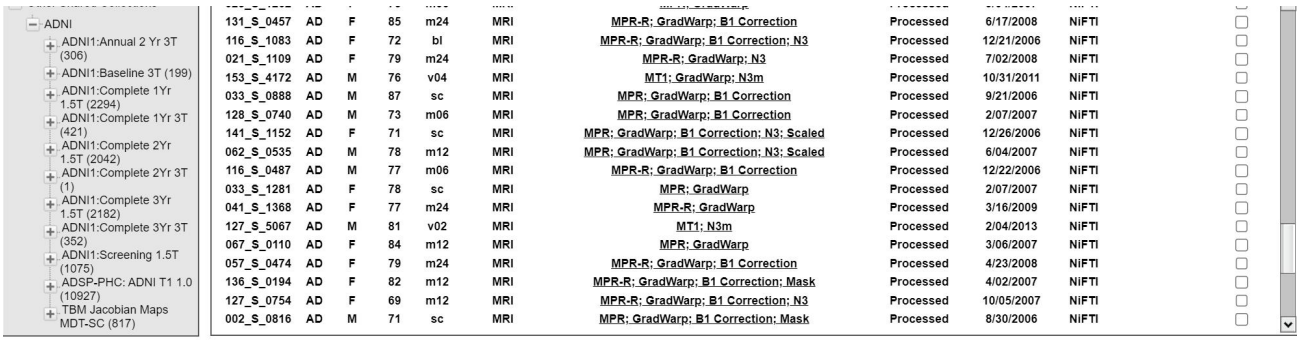
（1）自定义数据集



可以通过选择 Advanced Search 进行自定义筛选

（2）共享数据集（Data Collection）

在 Data collections 页面左侧，可以看到 ADNI 上一些已打包好的共享的数据集，也可以来选择下载

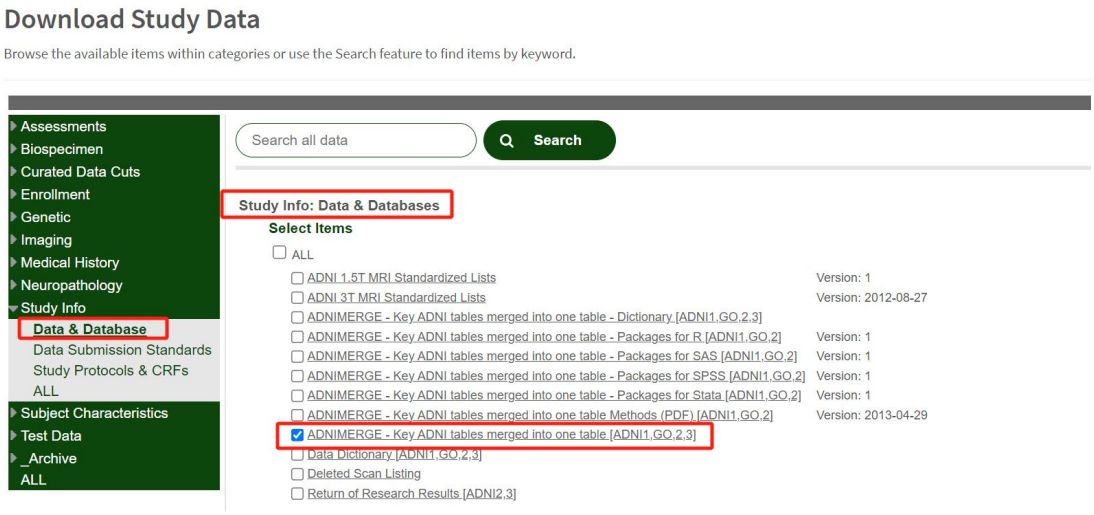


ADNI1:Annual 2 Yr 3T: 在 ADNI1 研究中，每年进行一次 3T 核磁共振成像，为期 2 年

ADNI1:Baseline 3T: 在研究开始时对参与者进行一次 3T 核磁共振成像。这种成像技术用于

获取参与者入组时的大脑图像，以作为后续研究的基准
ADNI1:Complete 1 Yr 3T：在研究开始后的第一年对参与者进行一次 3T 核磁共振成像
ADNI1: Complete 2 Yr 1.5T：在研究开始后的第二年对参与者进行一次 1.5T 核磁共振成像

三、临床数据下载(study data)



StudyInfo -> Data&DataBases
ADNIMERGE - Key ADNI tables merged into one table [ADNI1,GO,2,3]

在该表格中可以得到所有患者的基本信息，Research ID, age, sex, 认知测试分数，Ventricles（脑室），Hippocampus（海马体体积），WholeBrain（大脑总体积）, Entorhinal (内嗅皮层) , Fusiform, MidTemp（中颞叶），ICV(颅内容积)，等数据和 baseline 数据

关于 Fusiform 的不同解释：

1. 枕颞回（Fusiform gyrus）：枕颞回是大脑皮质的一部分，位于颞叶后部和顶叶之间。枕颞回在视觉加工中扮演重要角色，特别是在面孔和物体识别方面。它被认为与面孔识别、物体识别、颜色加工和字体辨认等视觉认知功能密切相关。
2. 神经束状结构（Fusiform fasciculus）：神经束状结构是大脑中两个脑区之间的神经纤维束。具体而言，它连接了颞叶的枕颞回和枕叶的颞顶回（temporoparietal junction）。这个神经束状结构在语言加工和理解中起着重要作用，特别是在语义处理和语言表达之间的信息传递中。

BB	BC	BD	BE	BF	BG	BH
Ventricles	Hippocampus	WholeBrain	Entorhinal	Fusiform	MidTemp	ICV
118233	8336	1229740	4177	16559	27936	1984660
84599	5319	1129830	1791	15506	18422	1920690
88580	5446	1100060	2427	14400	16972	1906430
90099	5157	1095640	1596	14617	17330	1903820
97420	5139	1088560	1175	14033	16398	1903420
39605	6869	1154980	3983	19036	19615	1679440

CE	CF	CG	CH	CI	CJ	CK
Ventricles_bl	Hippocampus_bl	WholeBrain_bl	Entorhinal_bl	Fusiform_bl	MidTemp_bl	ICV_bl
118233	8336	1229740	4177	16559	27936	1984660
84599	5319	1129830	1791	15506	18422	1920690
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三、往期论文所采用的数据特征

(1) biomarkers for AD and progression to AD dementia: cerebrospinal fluid (CSF) analysis of β-amyloid (Aβ42) or the ratio of Aβ42/Aβ40, P-tau and neurofilament light (NfL), as well as Aβ-positron emission tomography (PET) and tau-PET

PS. Study data 中只有“ABETA, TAU,PTAU”