Supplementary Material

Oscillatory Activity of the Hippocampus in Prodromal Alzheimer's Disease: A Source-Space Magnetoencephalography Study

ANOVA Analysis

Supplementary Table 1. Absolute power repeated measures ANOVA, global and hippocampal regions. Significant effects are printed in bold.

|	Within Subjects		Between Subjects
	Region	Region x Group	Group
Total	$F[2,50]=32.325$ $p<0.001$	$F[4,102]=1.561$ $p=0.192$	$F[2,50]=1.812$ $p=0.174$
Delta (0.5-4 Hz)	$F[2,50]=26.127$ $p<0.001$	$F[4,102]=1.523$ $p=0.202$	$F[2,50]=2.689$ $p=0.078$
Theta (4-8 Hz)	$F[2,50]=30.448$ $p<0.001$	$F[4,102]=2.114$ $p=0.096$	$F[2,50]=6.563$ $p=0.003$
Alpha 1 (8-10 Hz)	$F[2,50]=24.388$ $p<0.001$	$F[4,102]=1.738$ $p=0.164$	$F[2,50]=3.652$ $p=0.033$
Alpha 2 (10-13 Hz)	$F[2,50]= 26.729$ $p<0.001$	$F[4,102]=2.214$ $p=0.032$	$F[2,50]=1.396$ $p=0.257$
Beta (13-30 Hz)	$F[2,50]= 14.418$ $p<0.001$	$F[4,102]=1.178$ $p=0.325$	$F[2,50]=1.121$ $p=0.334$
Gamma (30-45 Hz)	$F[2,50]= 4.334$ $p=0.017$	$F[4,102]=1.496$ $p=0.211$	$F[2,50]=0.728$ $p=0.488$

Supplementary Table 2. Relative power repeated measures ANOVA, global and hippocampal regions. Significant effects are printed in bold.

	Within Subjects		Between Subjects
	Region	Region x Group	Group
Delta (0.5-4 Hz)	$F[2,50]=2.661$ $p=0.080$	$F[4,102]=1.323$ $p=0.269$	$F[2,50]=3.203$ $p=0.049$
Theta (4-8 Hz)	$F[2,50]=14.404$ $p<0.001$	$F[4,102]=0.483$ $p=0.728$	$F[2,50]=15.042$ $p<0.001$
Alpha 1 (8-10 Hz)	$F[2,50]=18.627$ $p<0.001$	$F[4,102]=1.439$ $p=0.228$	$F[2,50]=6.739$ $p=0.003$
Alpha 2 (10-13 Hz)	$F[2,50]=1.334$ $p<0.267$	$F[4,102]=3.197$ $p=0.021$	$F[2,50]=1.868$ $p=0.165$
Beta (13-30 Hz)	$F[2,50]=39.593$ $p<0.001$	$F[4,102]=0.947$ $p=0.430$	$F[2,50]=5.785$ $p=0.005$
Gamma (30-45 Hz)	$F[2,50]=111.395$ $p<0.001$	$F[4,102]=3.363$ $p=0.013$	$F[2,50]=3.370$ $p=0.042$

Classification accuracy

In addition to the ROC curves shown in the main text, here we report the remaining ROC curves that produced an AUC higher than 0.8.
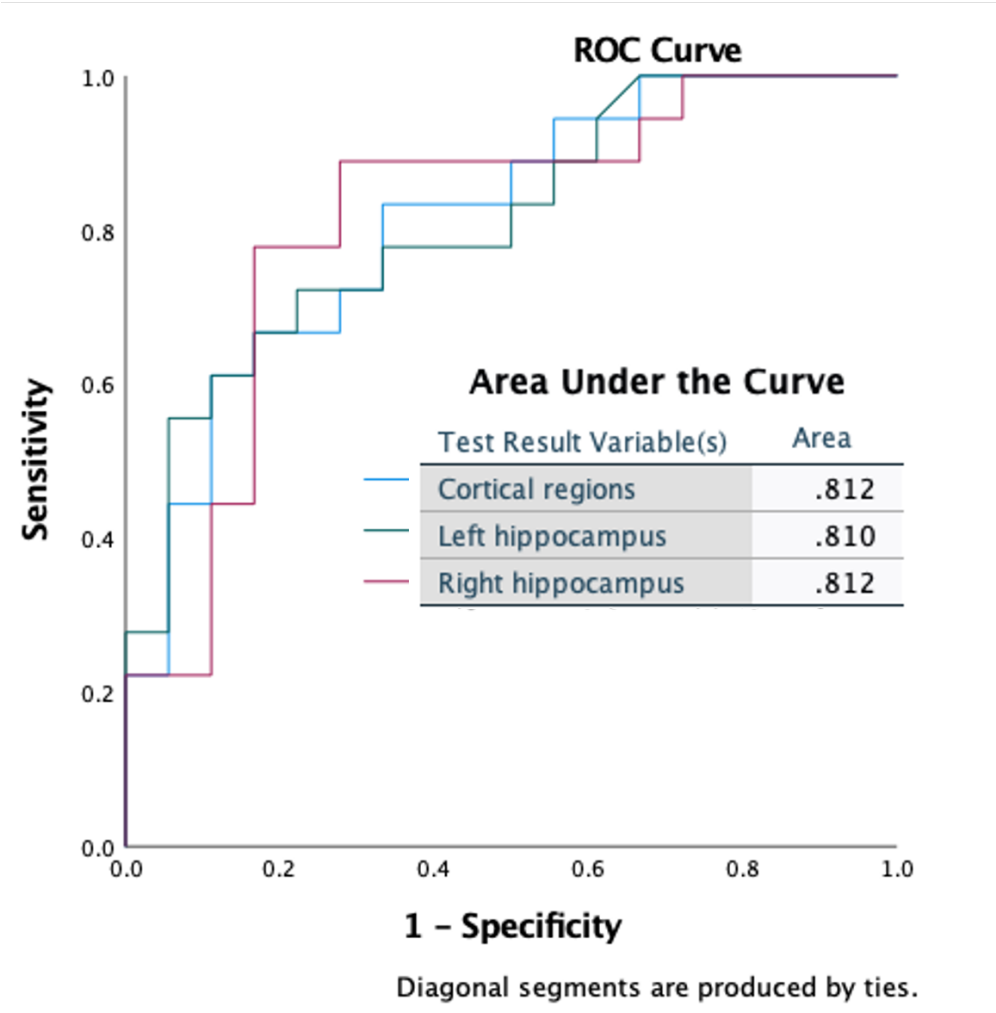
Relative theta power – MCI versus SCD
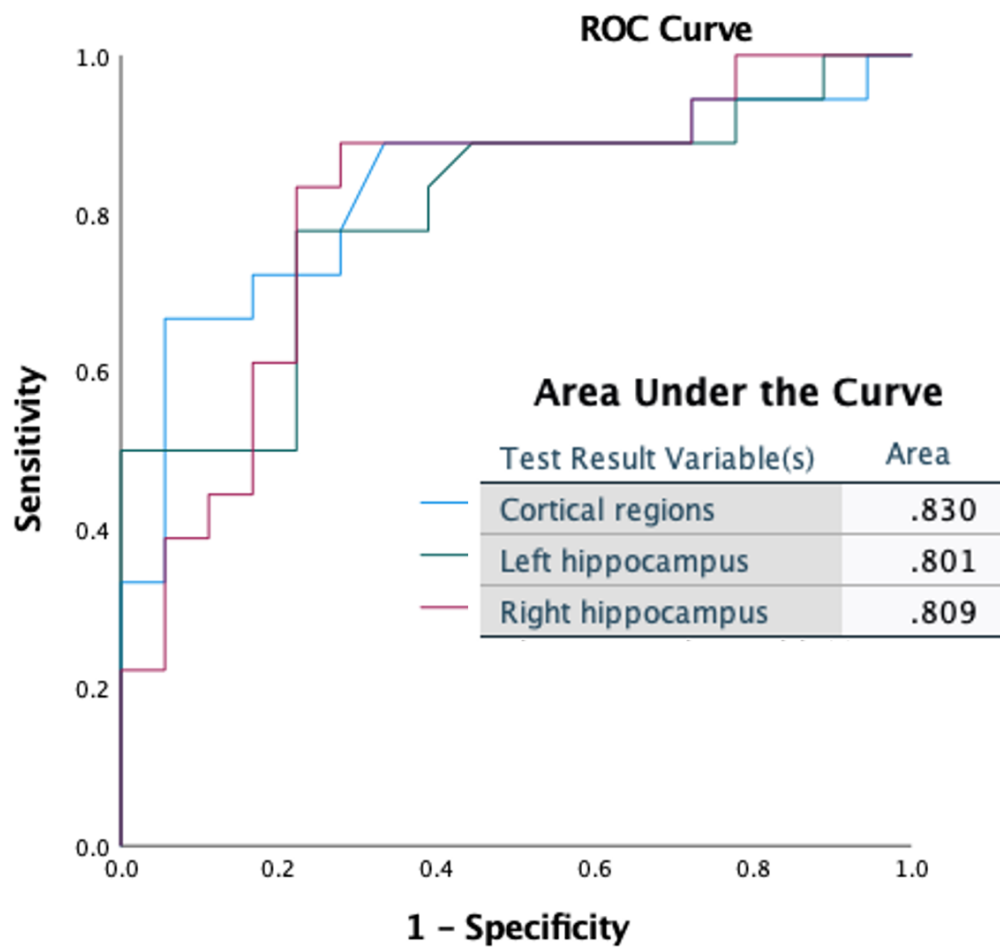
Supplementary Figure 1. ROC curves for discrimination between MCI and SCD, based on relative power in the theta band (4-8 Hz).

# Relative lower alpha power – MCI versus AD

Supplementary Figure 2. ROC curves for discrimination between MCI and AD, based on relative power in the lower alpha band (8-10 Hz).
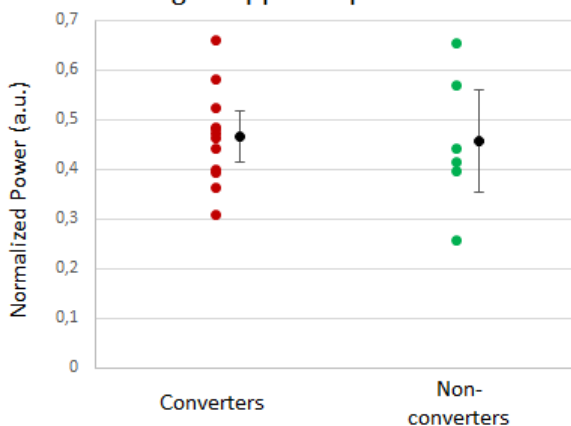
Comparison of MCI patients who had or had not converted to AD dementia at the 3-year follow-up

While we did not set out to distinguish between those MCI patients who had converted to AD dementia at the 3-year follow-up, e.g., due to our sample size not being large enough, we have included here a brief comparison of the two subgroups. The converters (N=12) did not differ significantly from the non-converters (N=6) in terms of absolute or relative power in the theta band, the lower alpha band, the upper alpha band, or the beta band.
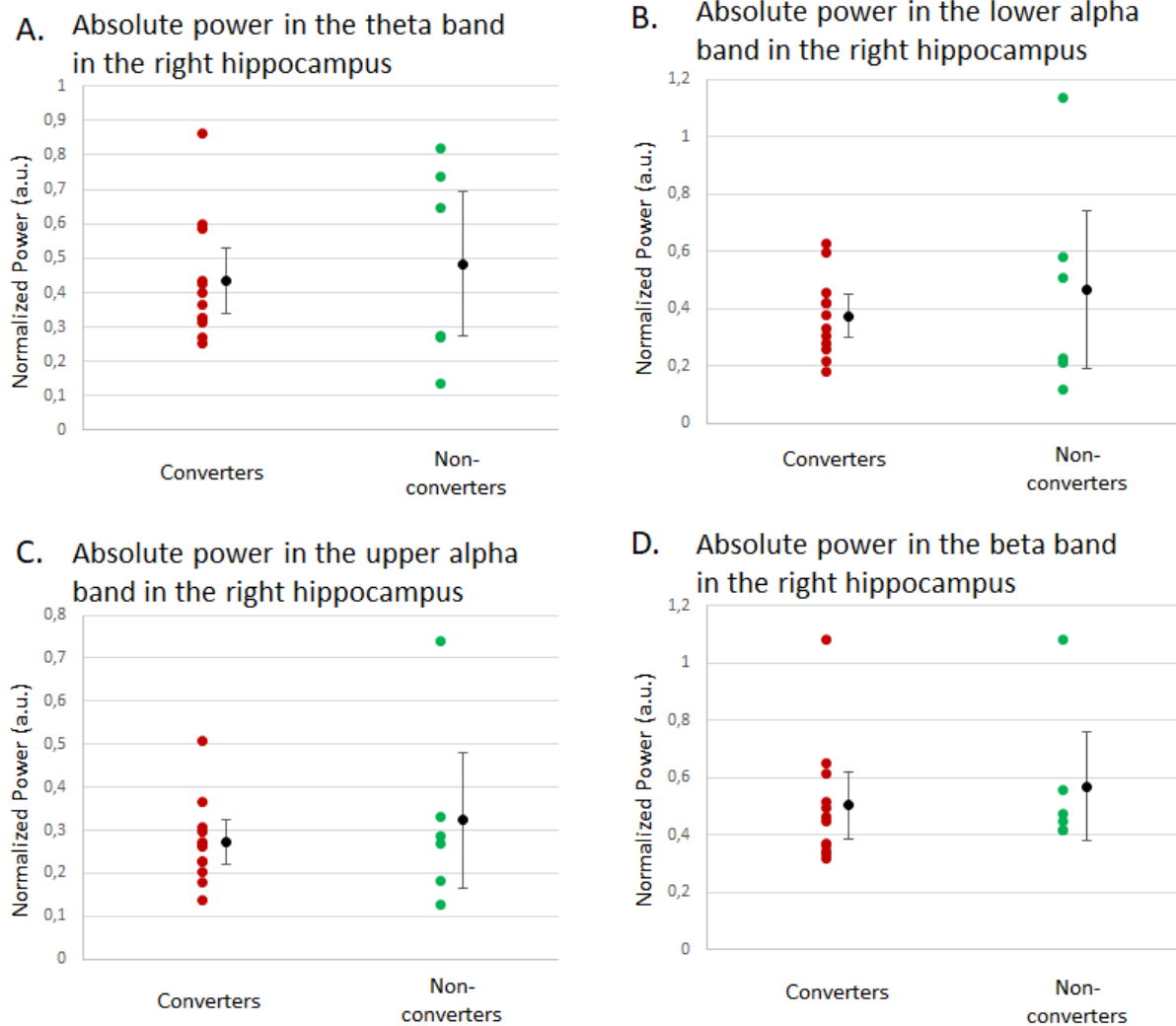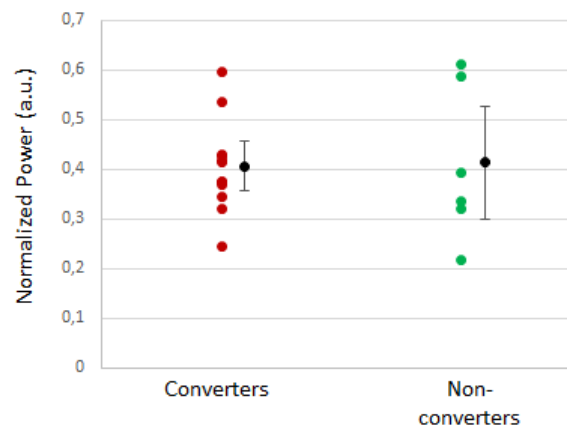

Supplementary Figure 3. Comparison of absolute power in the right hippocampus between MCI patients who had converted to AD dementia at the 3-year follow-up (red) versus those who had not (green). There were no significant differences between the converters and non-converters in (A) the theta band (4-8 Hz, p=0.64), (B) the lower alpha band (8-10 Hz, p=0.46), (C) the upper alpha band (10-13 Hz, p=0.49), or (D) the beta band (13-30 Hz, p=0.57). Shown in black are the corresponding mean and error bars indicating 95% confidence interval.
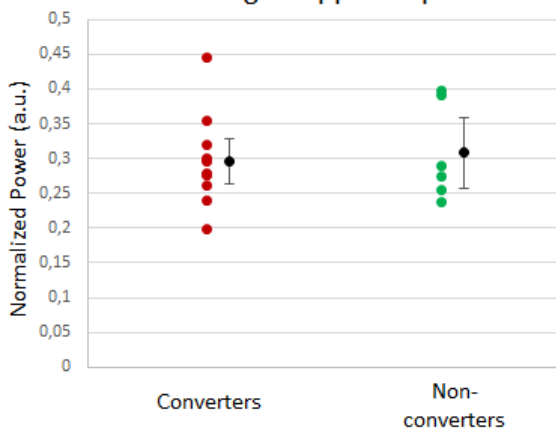
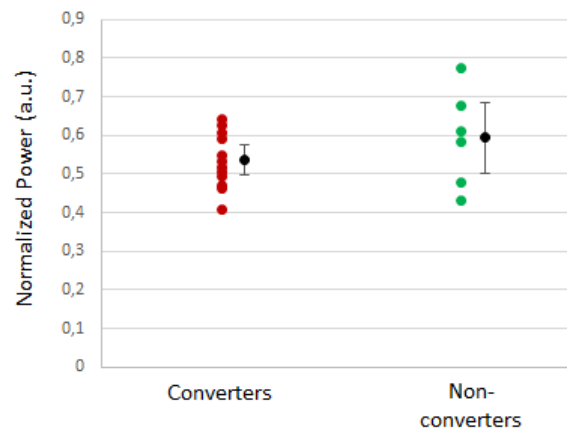**A.** Relative power in the theta band in the right hippocampus

B. Relative power in the lower alpha band in the right hippocampus

C. Relative power in the upper alpha band in the right hippocampus

D. Relative power in the beta band in the right hippocampus

Supplementary Figure 4. Comparison of relative power in the left hippocampus between MCI patients who had converted to AD dementia at the 3-year follow-up (red) versus those who had not (green). There were no significant differences between the converters and non-converters in (A) the theta band (4-8 Hz, p=0.87), (B) the lower alpha band (8-10 Hz, p=0.90), (C) the upper alpha band (10-13 Hz, p=0.72), or (D) the beta band (13-30 Hz, p=0.22). Shown in black are the corresponding mean and error bars indicating 95% confidence interval.