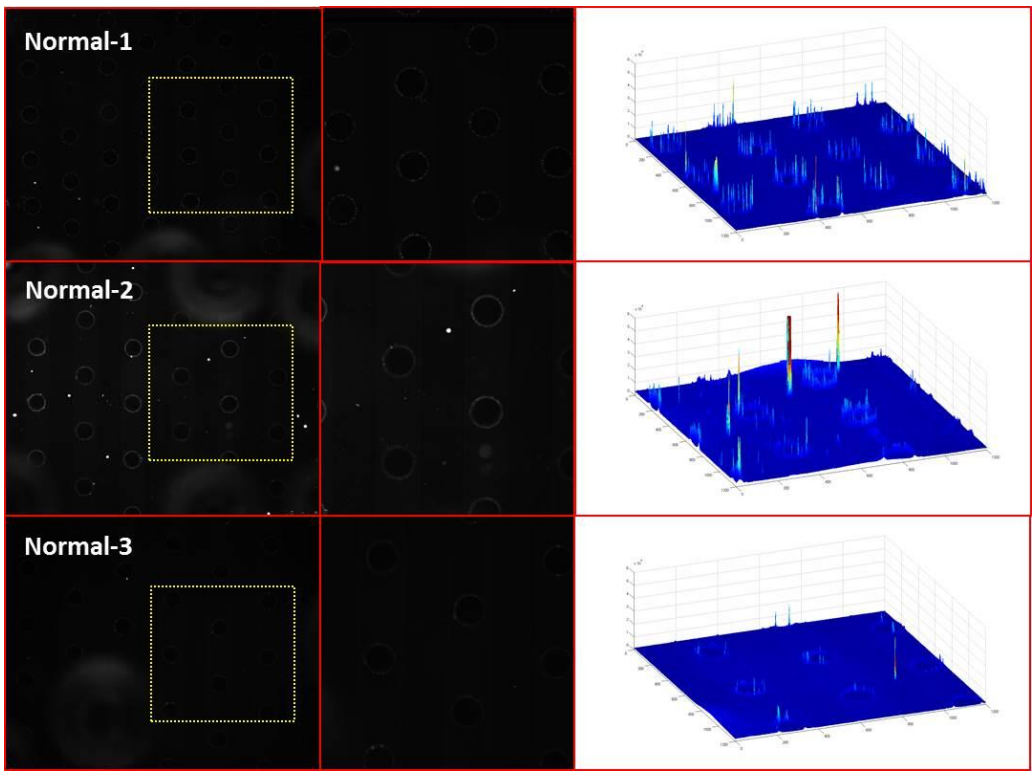
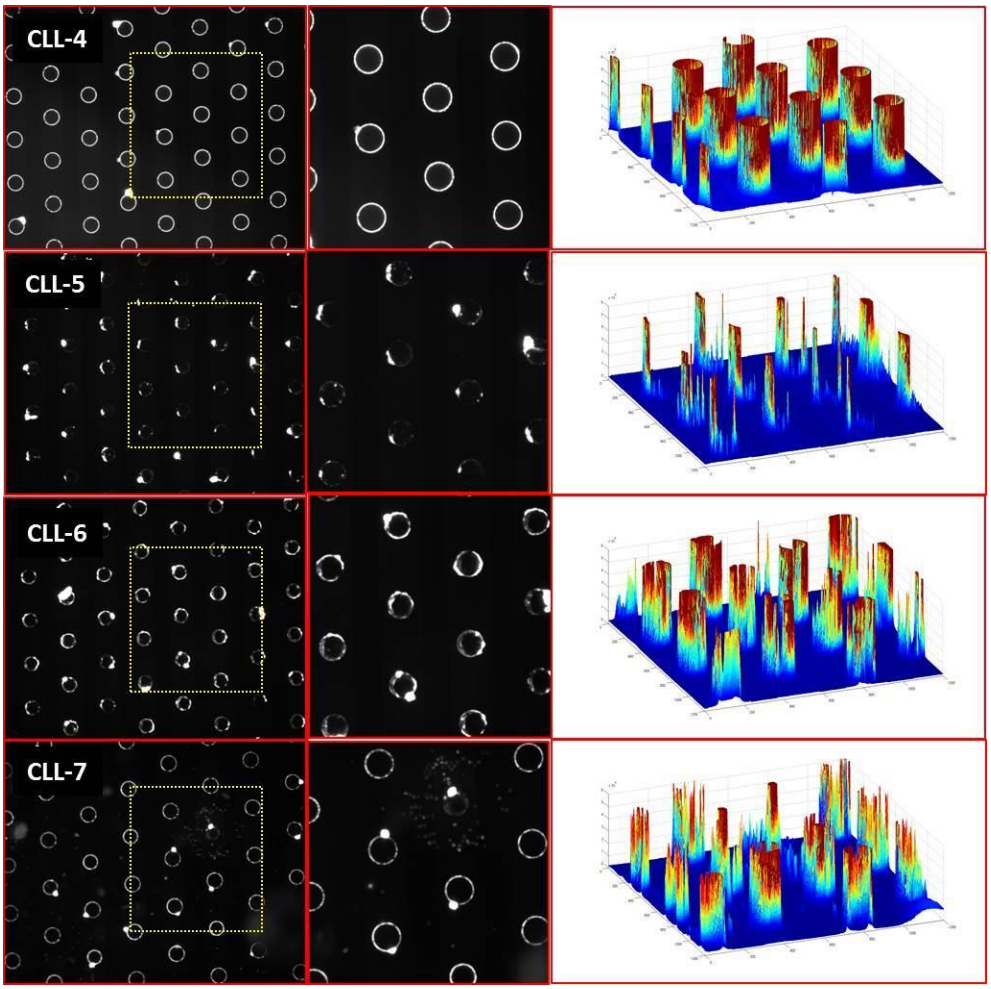
SUPPLEMENTAL MATERIALS SECTION:

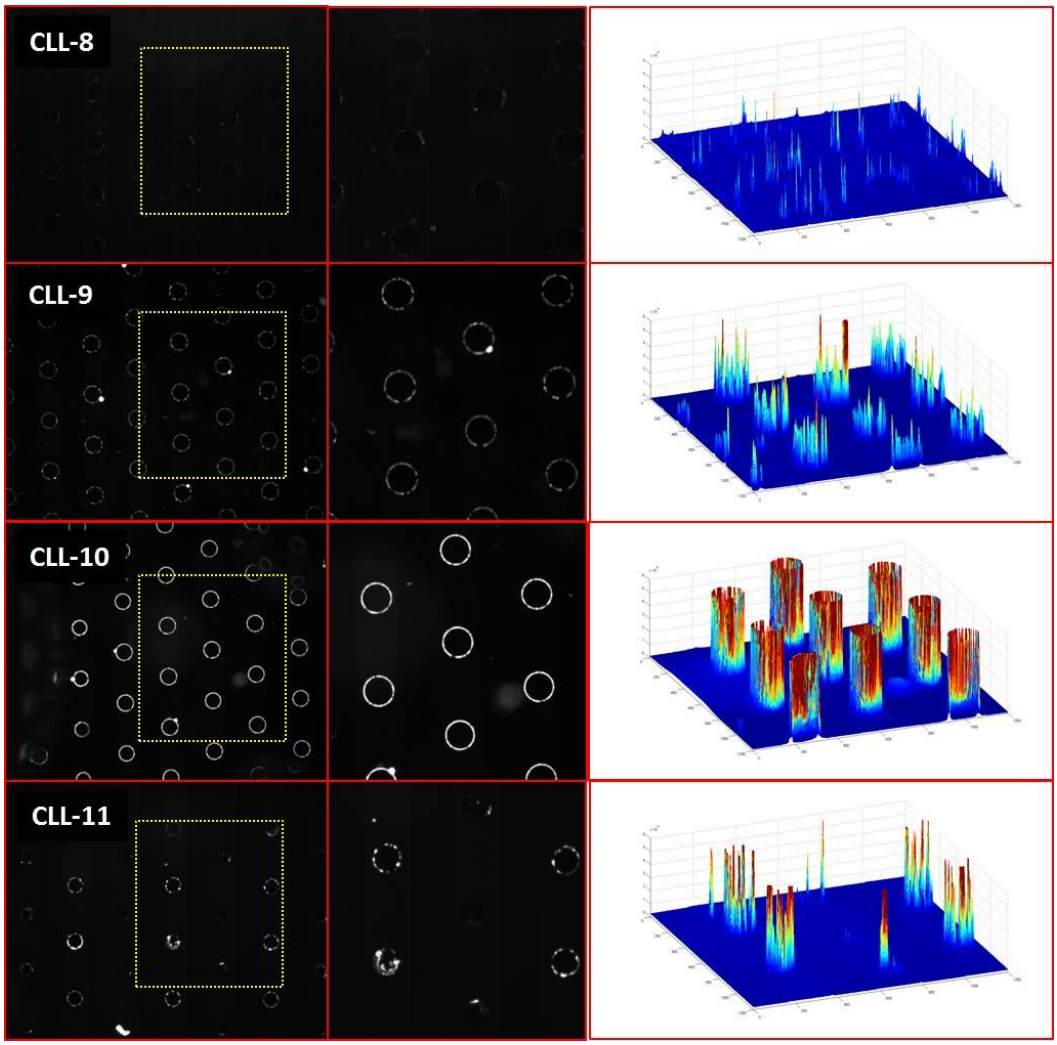
Supplemental materials section contains Fig. 6, 7, and 8 which show the on-chip fluorescence images for all three normal blood samples and CLL blood samples CLL-4 , 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15. Other results regarding the overall quality of the DNA sequencing data that was obtained are presented in Fig.9.



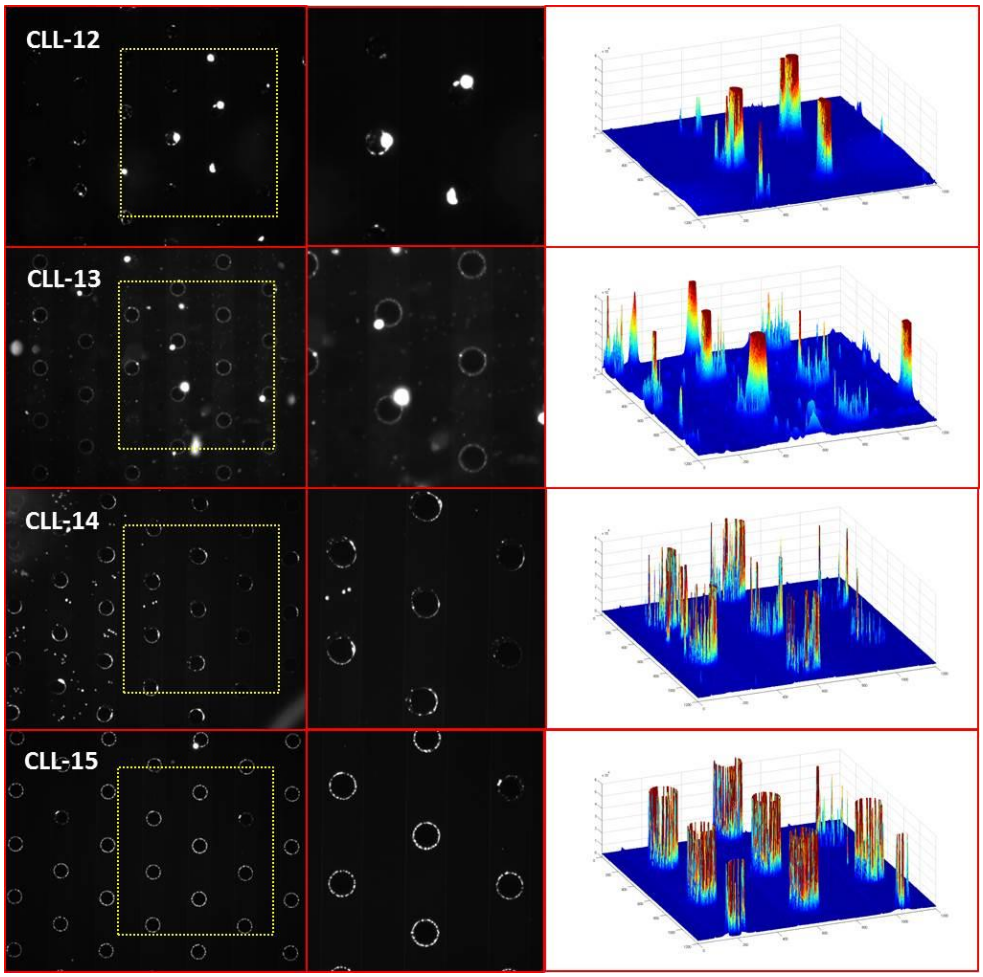
Supplemental Fig. 6 - Fluorescent detection of ccf-DNA in the normal blood samples. *On-chip fluorescence imaging results from 25 μl blood samples showing SYBR Green stained ccf-DNA that was concentrated into the DEP high-field regions after the DEP field was applied for three minutes. Images of the three normal blood sample (Normal-1, Normal-2, and Normal -3). Yellow dotted square areas in the images on the left side are enlarged in the center column images. The right side column shows 3D fluorescence intensity images created by MATLAB, which provide better visualization of the relative amounts of ccf-DNA that were isolated on the DEP high-field areas over the microelectrodes.*



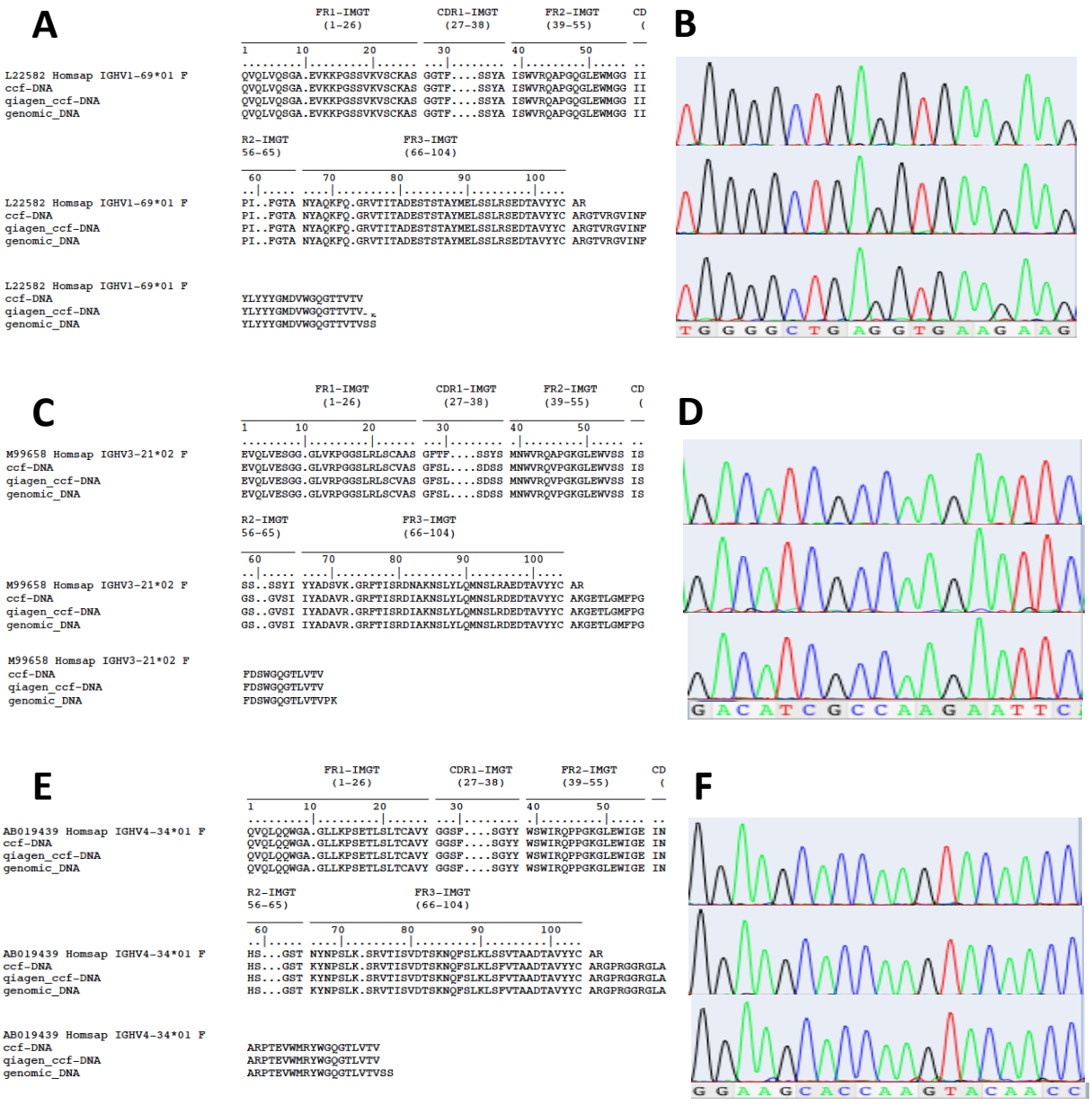
Supplemental Fig. 7 - Fluorescent detection of ccf-DNA in CLL-4, CLL-5, CLL-6 and CLL-7 patient samples. *On-chip fluorescence imaging results from 25 μl blood samples showing SYBR Green stained ccf-DNA that was concentrated into the DEP high-field regions after the DEP field was applied for three minutes. Images of CLL-4, CLL-5, CLL-6 and CLL-7 patient samples. Yellow dotted square areas in the images on the left side are enlarged in the center column images. The right side column shows 3D fluorescence intensity images created by MATLAB, which provide better visualization of the relative amounts of ccf-DNA that were isolated on the DEP high-field areas over the microelectrodes.*



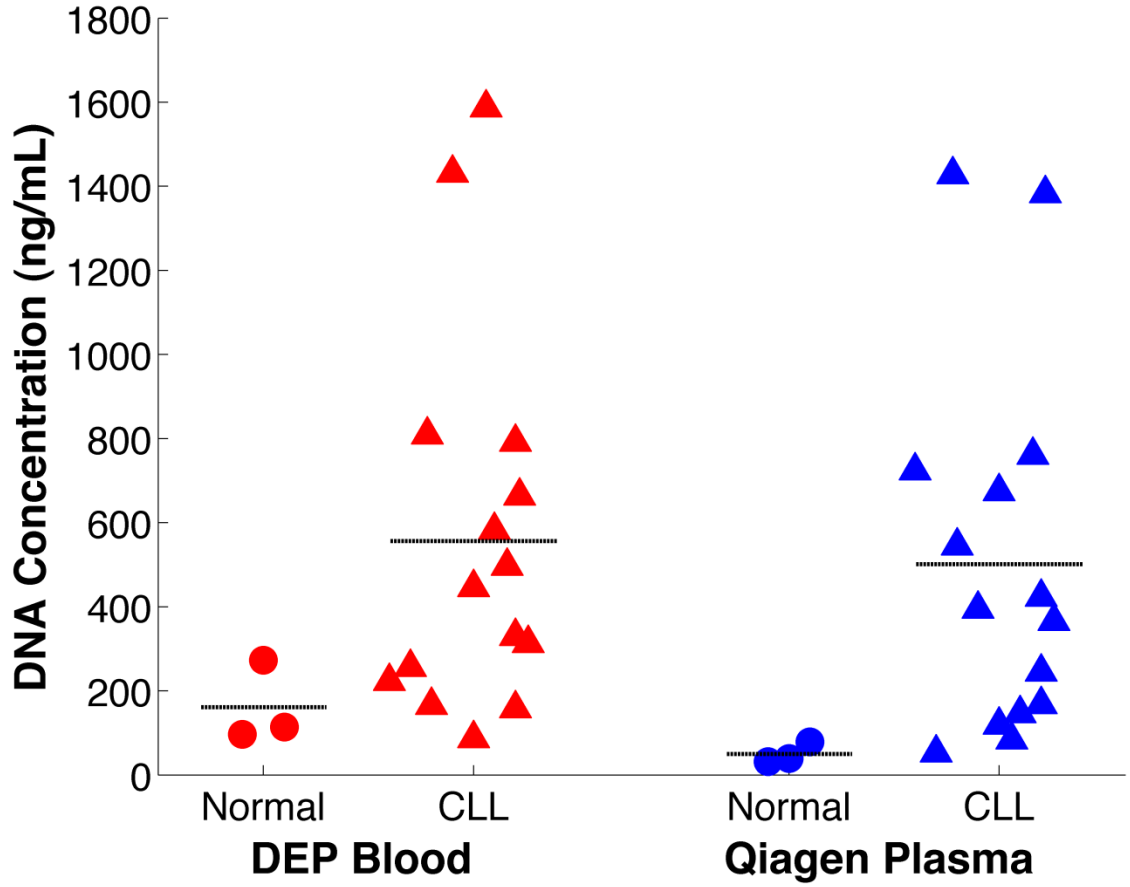
Supplemental Fig. 8 - Fluorescent detection of ccf-DNA in CLL-8, CLL-9, CLL-10 and CLL-11 patient samples. *On-chip fluorescence imaging results from 25 μl blood samples showing SYBR Green stained ccf-DNA that was concentrated into the DEP high-field regions after the DEP field was applied for three minutes. Images of CLL-8, CLL-9, CLL-10 and CLL-11 patient samples. Yellow dotted square areas in the images on the left side are enlarged in the center column images. The right side column shows 3D fluorescence intensity images created by MATLAB, which provide better visualization of the relative amounts of ccf-DNA that were isolated on the DEP high-field areas over the microelectrodes.*



Supplemental Fig. 9 - Fluorescent detection of ccf-DNA in CLL-12, CLL-13, CLL-14 and CLL-15 patient samples. *On-chip fluorescence imaging results from 25 μl blood samples showing SYBR Green stained ccf-DNA that was concentrated into the DEP high-field regions after the DEP field was applied for three minutes. Images of CLL-12, CLL-13, CLL-14 and CLL-15 patient samples. Yellow dotted square areas in the images on the left side are enlarged in the center column images. The right side column shows 3D fluorescence intensity images created by MATLAB, which provide better visualization of the relative amounts of ccf-DNA that were isolated on the DEP high-field areas over the microelectrodes.*



Supplemental Fig. 10 *- Sequencing results obtained from ccf-DNA, qiagen ccf-DNA and genomic DNA of 3 representative patients: CLL9 (A, B), CLL7 (C, D), CLL14 (E, F). Panel A, C and E represent the amino acid sequences obtained from each type of DNA compared to the reference IGHV amino acid sequence (first line in each panel). Panel B, D and F represent detailed chromatograms of the sequences.*



Supplemental Figure 11 – DNA concentration scatter plot *- Scatter plot of the ccf-DNA concentrations in the final eluted samples obtained directly from blood using the DEP process and from plasma using the Qiagen process. The dotted lines represent the average value for all DNA that was isolated by each process. The DNA concentrations were determined by fluorescence analysis using Quant-iT PicoGreen (Invitrogen) assay for double-stranded (ds) DNA.*

Supplemental Table 1 – CLL patient characteristics and treatment status

ID	Age at CLL Diagnosis	Gender	RAI Stage at Sample Collection	Treatment Status at Sample Collection
CLL-1	49	Female	RAI Stage 4	Treated
CLL-2	45	Male	RAI Stage 2	Not Treated
CLL-3	58	Female	RAI Stage 2	Treated
CLL-4	67	Male	RAI Stage 3	Treated
CLL-5	50	Male	RAI Stage 4	Treated
CLL-6	54	Male	RAI Stage 2	Treated
CLL-7	55	Male	RAI Stage 2	Not Treated
CLL-8	62	Male	RAI Stage 2	Not Treated
CLL-9	68	Male	RAI Stage 2	Not Treated
CLL-10	63	Female	RAI Stage 2	Not Treated
CLL-11	49	Male	RAI Stage 3	Not Treated
CLL-12	69	Male	RAI Stage 4	Treated
CLL-13	44	Male	RAI Stage 1	Not Treated
CLL-14	68	Female	RAI Stage 2	Not Treated
CLL-15	67	Female	RAI Stage 2	Not Treated