Dr. Pillar is a Hemopathologist and Molecular Pathologist, and Director Pathology Informatics, City of Hope, CA.

Precision medicine is the new term for Personalized Medicine, using “scientific reasons” for choosing the right treatment for an individual. Genetic changes/mutations such as deletions, insertions, and translocations slowly break down over time the B cells’ ability to function. Most NHL’s average 88 mutations but only 10 have been identified to date; only 10 mutations are needed for AML, less than 20 for CLL, 120 for melanoma and 160 for lung cancers (MCL was not specifically mentioned).

Dr. Pillar attributes most genetic changes to “chance/bad luck”, followed by radiation and chemical exposure, both of which damage DNA, and smoking. Only .5% of genes are critical for cancer to develop.

The Human Genome Project, completed in 2001 was a game changer for advancing Precision Medicine research. Decisions about which genes to sequence became based on potential useful treatments, resulting in a drug being developed based on the sequencing findings.

Dr. Pillar recommends using an initial core tissue (not needle) biopsy before starting treatment as the BEST sample for analyzing DNA.

Ki67 is a protein stain used to determine a “rough indicator” of the rate of tumor growth, not proliferation. Ki67 is strong in highly active cells.

Dr. Evans:

Challenge in precision medicine is the lack of homogeneity in NHL subtypes yet recent research suggests that a medicine approved for one cancer type may work for some NHL’s due to similarities of proteins in many DNA profiles.

An emerging trend is to consider dropping 1 medication of a combination treatment if the patient’s PET/CT scan 2-3 months after starting treatment is negative instead of making that decision based on scans later in treatment cycles.

Another emerging trend is potential clinical trials using Singular Nucleotide Polymors (SNP’s) to match chemo doses to normal DNA and genetic blood DNA profiles (not the tumor DNA itself) instead of the currently used height and weight information only.