and acute myeloid leukemic (AML) patients’ ex vivo cell cultures, we correlated the cell biological data with the profiles of cell culture supernatants derived VOCs.

Materials and Methods DC/DClue from leukemic or healthy whole blood (WB) were generated without (Control) or with immunomodulatory Kit M (Granulocyte-macrophage-colony-stimulating-factor (GM-CSF) + prostaglandin E1 (PGE1)) in dendritic cell cultures (DC culture). Kit pretreated/not pretreated WB was used to stimulate T cell enriched immunoreactive cells in mixed lymphocyte cultures (MLC culture). Leukemia-specific adaptive and innate immune cells were detected with degranulation assay (Deg) and an intracellular assay (InCyt). Anti-leukemic cytotoxicity was explored with a cytototoxicity fluorescence assay (CTX). VOCs collected from DC- and MLC cultures supernatants (with vs. without Kit M pre-treatment and before vs. after culture) were measured by eNose.

Results Compared to Control (without treatment) a Kit M pretreated leukemia and healthy WB gave rise to higher frequencies of mature (leukemia derived) DC subtypes and activated and memory T cells after MLC. Moreover, antigen (leukemia) specific cells of several lines (innate and adaptive immunity cells) were induced giving rise to blast lysing cells. The eNose could significantly distinguish between healthy and leukemic patients’ serum-, DC- and MLC-culture supernatants derived volatile phases and could significantly separate several supernatants (with vs. without Kit M treatment, cultured vs. uncultured) derived VOCs within subgroups (healthy DC or leukemic DC or healthy MLC or leukemic MLC supernatants). Interestingly, the eNose could indicate a Kit M and culture associated effect.

Conclusions The eNose might be a prospective option for a deduction of a VOC based profiling strategy using serum or cell culture supernatants and could be a useful diagnostic tool to recognize AML illness.

REFERENCES