This is the executive summary of the IUlS MonoDC Nomenclature Committee online meeting held on June 29th, 2023.

1. Monocyte subsets and SCS: the different names given to similar clusters and the issues of clustering were presented and discussed, proposal to start a working group to oversee the nomenclature in this field.

2. slan+ DCs now are slan+ monocytes: Presentation on slan+ cells, which initially were called slanDCs. Numerous phenotypic, functional and molecular studies have now shown that these cells represent monocytes. After discussion the committee voted with great majority to support the statement “The MonoDC Nomenclature Committee recognizes that slan+ cells are monocytes and not DCs”

3. Monocyte precursors: state of the art regarding cMoP and pre-monocytes in man was presented, more independent publications are needed for a definite statement on phenotype and function of these cells. The role of neutrophil-committed precursors in generating neutrophilic monocytes was discussed and the data regarding human myelopoiesis in Cell Reports, 42, 112165, 2023 were scrutinized and were considered to be not convincing. Neutrophil lineage cells show low expression of CD14, in myelodysplasia and after G-CSF the CD14 receptor is up-regulated, CD66b expressing cells with high CD14 are granulocytes and not monocytes. Similar analyses of the literature with respect to the mouse is outstanding.

4. Monocyte subsets in mouse and rat: In the mouse there has not been much change since the 2010 nomenclature. TREML4/Ly6C is often used in place of CD43/Ly6C to define subsets. Markers, which are informative in man (CX3CR1, CD64, CCR2), show no informative differential cell surface expression in the mouse.

In the rat monocyte subsets are defined via HIS48 / CD43 in combination with a lineage marker based on CD68 or CD115. There is no clearly detectable intermediate subset in this species.

5. Monocyte subsets in the pig: definition is usually done with CD14 and CD163 antibodies. In contrast to man, the CD163 scavenger receptor for hemoglobin is expressed on non-classical monocytes, not on classical monocytes. It is
suggested to consider a proposal for monocyte subset nomenclature for all veterinary species.

6. Dendritic cell subsets overview: the confusing nomenclature that has evolved over the last couple years and that was further complicated by single cell sequencing studies (e.g. Science, 356, eaah4573, 2017), was presented. Strategies to resolve this were discussed.

7. Should pDCs be excluded from the DC family? Referring to a discussion started with Nat Rev Immunol 2023, 23:1, the features of pDCs with high IFNa production, with low or no APC and with migration to LN from blood via HEV were presented as being incompatible with a DC family member, which calls for high APC and migration from tissue to LN. Pro-and con-points were discussed. To be followed up at next MonoDC conference.

8. Are DC2b / DC3 cells monocytes? The CD14+ CD88+ CD163+ subset of CD1c+ cells was shown to carry many additional features typical of monocytes but not typical of DCs. Their assignment to a unique trajectory of monocytes was discussed. More data are needed.

9. CD56+ CD123+ CD303+ Axl+ cells: a new type of myeloid DC/pre-DC? The similar properties of cells described in Protein Cell, 6:297–306, 2015, in Science, 356, eaag3009, 2017 and in Science, 356, 283, 2017 were presented with evidence of shared markers and cytokine expression patterns. Cells, described in Nature Immunol, 19, 711–722, 2018 and in Cell Reports, 29, 3736–3750, 2019, may represent a mouse homologue. Discussion whether these cells are an emerging subset of DCs, a DC-precursor or both. To be further discussed at next MonoDC conference.

10. Moratorium on numbering beyond DC1 and DC2? Given the confusion of cells covered under the names DC3, DC4, DC5 and DC6 and given the need to restructure this, it was proposed to call for a moratorium. Discussion deferred to next MonoDC conference.