# Standardizing Biocompatibility Assays via Precise Cell Counting

Woitschach et al. (2021). Innate Immune Cell Interaction with polymer-coated Silicone; Materials, 14(10):2474. DOI: 10.3390/ma14102474.

| Immunology; Monocytes; Biocompatibility | |
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**The Challenge:**

Assessing the biocompatibility of new polymer-coated silicone (LSR-PMPC, LSR-PUR) by quantifying innate immune cell (monocyte/macrophage) adhesion and activation on these surfaces.

**CASY's Contribution:**

CASY determined the precise cell number and viability of isolated human monocytes. This standardized the cell seeding density (1 x $10^5$ cells/well) for all adhesion and cytokine assays. It was also used to count the adherenT-cells, proving that LSR-PMPC surfaces significantly reduced monocyte adhesion[444]

**Key Benefits to Researchers:**

- **Standardization:** Provided accurate, label-free counting of primary monocytes post-isolation, ensuring a precise and consistenT-cell seeding density for all experiments .
- **Accuracy:** Enabled quantitative, objective measurement of cell adhesion by accurately counting the number of adherenT-cells remaining on each material after 2 hours .
- **Validation:** This precise quantification was essential for validating the key finding: that the zwitterionic (LSR-PMPC) and polyurethane (LSR-PUR) coatings significantly reduce monocyte adhesion, indicating improved biocompatibility**.**

**CASY Analysis of Monocyte Adhesion on TPU and LSR Surfaces**

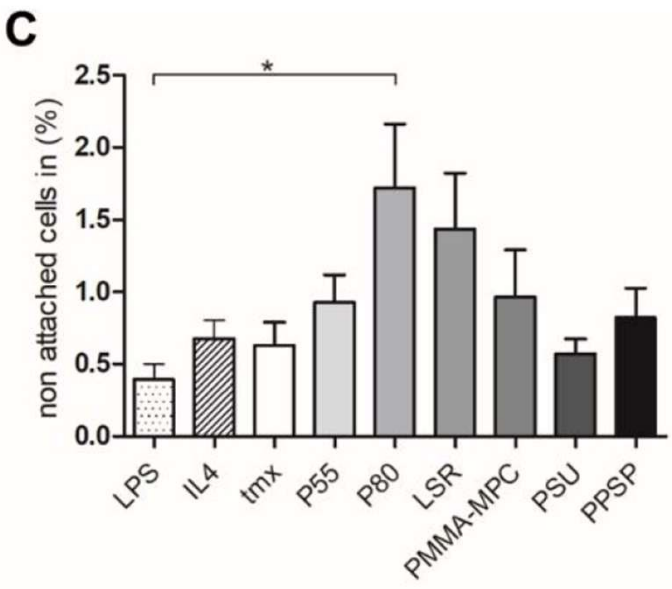


**Figure 2.** Decreased monocyte adhesion on thermoplastic polyurethane (TPU) and liquid silicone rubber (LSR) with only
minor effects on cell viability and metabolic activity. Then, 5 × 105 cells were incubated on the materials … **(C)** Non-attached cells were determined after 12 h of incubation by collecting the supernatants and counting the non-attached cells with Casy cell
counter.