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**Introduction & Purpose**
The peroxisome proliferator-activated receptors (PPARs) are involved in many critical physiological and pathological functions. Therefore a cell-based assay for the identification of high-affinity ligands would be a useful tool for studying the role of PPAR in mammalian biology. To characterize PPAR specificity of synthetic ligands, we are using HeLa-derived stable reporter cell lines in which PPARα, PPARγ, and PPARδ agonists induce luciferase activity.

**Methods**
Stable reporter cell lines were generated by Seimandi et al., 2005. They were designed to express a chimeric protein containing the ligand binding domain (LBD) of either human PPARα, human PPARγ, or human PPARδ fused to the yeast transactivator GAL4 DNA binding domain (DBD). The luciferase reporter gene was driven by a pentamer of the GAL4 recognition sequence in front of the β-globin promoter. A reference drug that lead to maximal activity has been established for each cell line, i.e. GW7647, L-165041 and BRL49653 for PPARα, PPARγ and PPARδ, respectively.

Dose-response studies were carried out on each PPAR cell line as follows. The cells were seeded in 96-well plates and incubated the following day with tested compounds for 24h. At the end of the incubation, the luciferase activity was measured using a BMG LUMItar Galaxy luminometer. Results expressed as relative light units (RLU) were obtained from experiments performed in triplicate for each tested compounds and for each tested concentration. Data were shown as means and standard deviations. Values were expressed as percentages of luciferase activity with the 100% activity set for the reference drug at 1µM for the respective cell line.

**Results**
We observed that the expression of PPAR isotypes modulated differentially the reporter gene basal activity and provided interesting information on the recruitment of HeLa-specific coregulators by PPARs. Using specific PPAR agonists and antagonists, we demonstrated that these stable cell lines allow specific and sensitive measurement of PPAR ligand activities. They provide a powerful high-throughput cell-based screening tool for identifying and characterizing PPAR ligands.

The tested compounds were classified for each PPAR subtype as non agonist, partial agonist and total agonist by comparison to the known drug references and the solvent vehicle (0.1% DMSO) as a negative control (Table 1 & figure 1).

**Conclusions**
To characterise PPAR specificity of synthetic ligands, we are offering stable HeLa-derived reporter assays in which PPARα, PPARγ, and PPARδ agonists induce luciferase activity. This service is available via tebu-bio services@tebu-bio.com