Reviewer’s report

Title: Over-expression of AhR (aryl hydrocarbon receptor) induces neural differentiation of Neuro2a cells: Neurotoxicology study

Version: 2 Date: 23 August 2006

Reviewer: David DS Sherr

Reviewer’s report:

General

---------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

---------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Comments to the authors:
This is a much improved manuscript that makes important observations about the potential function of the AhR in neurons. The implications of the results regarding the role of the AhR in neural development and the mechanisms through which environmental AhR ligands may alter neural development are significant and worthy of consideration.

Minor comments:

TCDD is not a PAH as stated on page 3.

For Figure 3, I believe the authors want to say that the AhR was decreased about 30% (not “attenuated by about 70%”) while the CYP1A1 mRNA levels were decreased about 60%.

On the top of page 8, I believe the authors want to say something like “…the AhR expressed in N2a-R? is functional as if activated by a ligand.”??

In the discussion the authors allude to “…following exposure of the developing neuron to TCDD…” but TCDD was not used in this study.

In the discussion the authors indicate “Hes-1 has been reported to up-regulate AhR through XRE binding.” I believe they meant to say something like, “…the AhR up-regulates Hes-1 through XRE binding.”

---------------------------------------------------------------

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.