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Observations concerning the synthesis of tryptamine homologues and branched tryptamine derivatives via the borrowing hydrogen process: synthesis of psilocin, bufotenin, and serotonin

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#### ACCEPTED MANUSCRIPT

### **Hydrogen Borrowing**

$$\begin{array}{c} R \\ R \\ N \\ H \\ \end{array} \begin{array}{c} R^2 \\ NR^3R^4 \\ \hline \\ R^1 \\ \end{array} \begin{array}{c} R^2 \\ NR^3R^4 \\ \hline \\ Cs_2CO_3 \ (1.1 \ equiv) \\ \hline \\ NMe_2 \\ \end{array} \begin{array}{c} NMe_2 \\ NH_2 \\ \hline \\ NH_2 \\ \end{array} \begin{array}{c} NMe_2 \\ NH_2 \\ \hline \\ NH_2 \\ \end{array}$$

**Give and take:** [Cp\*IrCl<sub>2</sub>]<sub>2</sub> effectively catalyzed the alkylation of indole with amino alcohols to give tryptamine homologues and branched (homo)-tryptamine derivatives via the borrowing hydrogen process. Applications to the syntheses of biologically active compounds such as Psilocin, Bufotenin, Serotonin, are also described.

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