**Photoredox Cobaloxime/Iridium Complex-Catalyzed Peptide-Bond Formation**

**Significance:** Peptide bond formation is important in drug discovery and medicinal chemistry. The authors have developed a photoredox cobaloxime/iridium complex-catalyzed reaction to form peptide bonds under mild conditions with triphenylphosphine as a gentle reductant.

**Comment:** Various examples of peptides, including dipeptides, tripeptides, and tetrapeptides were prepared in moderate to good yields under blue LED irradiation.

**Equations:**

\[
\text{PG-AA}^1-\text{OH} + \text{HCl•H-AA}^2-\text{OR} \xrightarrow{\text{PPh}_3 (1.0 \text{ equiv}), [\text{Ir}] (1 \text{ mol\%}), [\text{Co}] (5 \text{ mol\%}), \text{CH}_2\text{Cl}_2, \text{blue LEDs, r.t., 12 h}}} \text{PG-A}^1\text{A}^2-\text{OR}
\]

- 82% yield
- 55% yield, dr > 19:1
- 77% yield, dr > 19:1
- 74% yield
- 52% yield, dr > 19:1
- 64% yield, dr > 19:1

\[
\text{Fmoc-Gly-OH (1.2 equiv), PPh}_3 (1.0 \text{ equiv}), [\text{Ir}] (1 \text{ mol\%}), [\text{Co}] (5 \text{ mol\%}), \text{CH}_2\text{Cl}_2, \text{blue LEDs, r.t., 12 h}} \rightarrow \text{FmocHN-}\text{N-}\text{OEt}
\]

- 78% yield (2 steps)

\[
\text{H-Ala-Phe-OMe (1.0 equiv), PPh}_3 (1.0 \text{ equiv}), [\text{Ir}] (1 \text{ mol\%}), [\text{Co}] (5 \text{ mol\%}), \text{CH}_2\text{Cl}_2, \text{blue LEDs, r.t., 12 h}} \rightarrow \text{FmocHN-}\text{N-}\text{OEt}
\]

- 74% yield (2 steps)