Supporting Information: NMR Spectra for all compounds.
**General Information**

Toluene and THF were dried over sodium in the presence of benzophenone indicator. DCM and Et$_2$O were dried over activated alumina on a solvent system purchased from Innovative Technologies, Inc. Pd catalysts and ligands were purchased from Strem and Sigma-Aldrich. Other reagents and solvents were also obtained commercially and used without additional purification. K$_2$CO$_3$ was activated through microwave prior to use. CpPd(allyl) was prepared according to a literature procedure.$^1$ Benzylic esters were synthesized by known procedures.$^{2-11}$ The isolated products were purified on silica gel from Sorbent Technologies (40-63 μm particle size, 60 Å porosity, pH 6.5-7.5). The $^1$H and $^{13}$C NMR spectra were obtained on a Bruker Avance 400 or 500 MHz DRX spectrometer and were referenced to residual protio solvent signals. FTIR spectra were acquired on Shimadzu FTIR 8400S spectrometer. HRMS was performed on a LCT Premier TOF mass spectrometer using ESI techniques. Asymmetric analyses were performed via gas chromatography using Shimadzu GC-17A instrument with an attached AOC-20i auto injector and high performance liquid chromatography using Shimadzu SCL-10A VP instrument. Certain reactions that require very high temperatures were ran using Biotage Initiator Microwave Synthesizer equipped with Robot Eight Initiator System. Structural assignments of the isolated compounds were based on $^1$H, $^{13}$C, DEPT 135, COSY and HSQC spectroscopies.
$^1$H NMR Spectrum of Compound 1a

$^{13}$C NMR Spectrum of Compound 1a
$^1$H NMR Spectrum of Compound 1b

$^{13}$C NMR Spectrum of Compound 1b
$^1$H NMR Spectrum of Compound 1c

$^{13}$C NMR Spectrum of Compound 1c
$^1$H NMR Spectrum of Compound 1d

$^{13}$C NMR Spectrum of Compound 1d
$^{1}$H NMR Spectrum of Compound 1g

$^{13}$C NMR Spectrum of Compound 1g
$^1$H NMR Spectrum of Compound 1h

$^{13}$C NMR Spectrum of Compound 1h
$^1$H NMR Spectrum of Compound 1i

$^{13}$C NMR Spectrum of Compound 1i
$^{1}H$ NMR Spectrum of Compound 1j

$^{13}C$ NMR Spectrum of Compound 1j
$^1$H NMR Spectrum of Compound 1k

$^{13}$C NMR Spectrum of Compound 1k
$^1$H NMR Spectrum of Compound 1l

$^{13}$C NMR Spectrum of Compound 1l
$^{1}$H NMR  Spectrum of Compound 1m

$^{13}$C NMR  Spectrum of Compound 1m
\(^1\)H NMR Spectrum of Compound 1n

\(^{13}\)C NMR Spectrum of Compound 1n
$\text{H NMR Spectrum of Compound 1o}$

$\text{C NMR Spectrum of Compound 1o}$
\textbf{\(^1\text{H NMR Spectrum of Compound 1p}\)}

\textbf{\(^{13}\text{C NMR Spectrum of Compound 1p}\)}
$^1$H NMR Spectrum of Compound 1s

$^{13}$C NMR Spectrum of Compound 1s
$^1$H NMR Spectrum of Compound 1t

$^{13}$C NMR Spectrum of Compound 1t
$^1$H NMR Spectrum of Compound 1u

$^{13}$C NMR Spectrum of Compound 1u
$^1$H NMR Spectrum of Compound 2a

$^{13}$C NMR Spectrum of Compound 2a
$^1$H NMR Spectrum of Compound 2d

$^{13}$C NMR Spectrum of Compound 2d
$^{1}H$ NMR Spectrum of Compound 2e

$^{13}C$ NMR Spectrum of Compound 2e
$^1$H NMR Spectrum of Compound 2f

$^{13}$C NMR Spectrum of Compound 2f
$^{1}H$ NMR Spectrum of Compound 2g

$^{13}C$ NMR Spectrum of Compound 2g
$^1$H NMR  Spectrum of Compound 2h

$^{13}$C NMR  Spectrum of Compound 2h
$^1$H NMR Spectrum of Compound 2i

$^{13}$C NMR Spectrum of Compound 2i
$^1$H NMR Spectrum of Compound 2j

$^{13}$C NMR Spectrum of Compound 2j
$^1$H NMR Spectrum of Compound 2k

$^{13}$C NMR Spectrum of Compound 2k
$^1\text{H NMR Spectrum of Compound 2l}$

$^{13}\text{C NMR Spectrum of Compound 2l}$
$^1$H NMR Spectrum of Compound 2m

$^{13}$C NMR Spectrum of Compound 2m
$^{1}H$ NMR Spectrum of Compound 2n

$^{13}C$ NMR Spectrum of Compound 2n
$^{1}H$ NMR Spectrum of Compound 2o

$^{13}C$ NMR Spectrum of Compound 2o
$^1$H NMR Spectrum of Compound 3a

$^{13}$C NMR Spectrum of Compound 3a
$^1$H NMR Spectrum of Compound 3b

$^{13}$C NMR Spectrum of Compound 3b
$\text{H NMR Spectrum of Compound 3c}$

$\text{C NMR Spectrum of Compound 3c}$
$^{1}H$ NMR Spectrum of Compound 3d

$^{13}C$ NMR Spectrum of Compound 3d
$^1$H NMR Spectrum of Compound 3e

$^{13}$C NMR Spectrum of Compound 3e
$^1$H NMR Spectrum of Compound 3f

$^{13}$C NMR Spectrum of Compound 3f
$^1$H NMR Spectrum of Compound 3g

$^{13}$C NMR Spectrum of Compound 3g
$^1$H NMR Spectrum of Compound 3h

$^{13}$C NMR Spectrum of Compound 3h
\[ ^1H \text{ NMR Spectrum of Compound 5a} \]

\[ ^{13}C \text{ NMR Spectrum of Compound 5a} \]
$^1$H NMR Spectrum of Compound 5c

$^{13}$C NMR Spectrum of Compound 5c
$^1$H NMR Spectrum of Compound 5d

$^{13}$C NMR Spectrum of Compound 5d
$^1$H NMR Spectrum of Compound 5e

$^{13}$C NMR Spectrum of Compound 5e
$^{1}$H NMR Spectrum of Compound 5f

$^{13}$C NMR Spectrum of Compound 5f
**$^1$H NMR Spectrum of Compound 5g**

![$^1$H NMR Spectrum of Compound 5g](image)

**$^{13}$C NMR Spectrum of Compound 5g**

![$^{13}$C NMR Spectrum of Compound 5g](image)
$^1$H NMR Spectrum of Compound 5i

$^{13}$C NMR Spectrum of Compound 5i
$^1$H NMR Spectrum of Compound 5j

$^{13}$C NMR Spectrum of Compound 5j
$^1$H NMR Spectrum of Compound 5k

$^{13}$C NMR Spectrum of Compound 5k
$^1$H NMR Spectrum of Compound 5l

$^{13}$C NMR Spectrum of Compound 5l
$^1$H NMR Spectrum of Compound 5m

$^{13}$C NMR Spectrum of Compound 5m
$^1$H NMR Spectrum of Compound 5n

$^{13}$C NMR Spectrum of Compound 5n
$^{1}{H}$ NMR Spectrum of Compound 5o

$^{13}{C}$ NMR Spectrum of Compound 5o
$^1$H NMR Spectrum of Compound 5p

$^{13}$C NMR Spectrum of Compound 5p
$^1$H NMR Spectrum of Compound 5q

$^{13}$C NMR Spectrum of Compound 5q
$^1$H NMR Spectrum of Compound 5r

$^{13}$C NMR Spectrum of Compound 5r
$^1$H NMR Spectrum of Compound 5t

$^{13}$C NMR Spectrum of Compound 5t
$^1$H NMR Spectrum of Compound 5u

$^{13}$C NMR Spectrum of Compound 5u
$^1$H NMR Spectrum of Compound 5w

$^{13}$C NMR Spectrum of Compound 5w
\[ \text{H NMR Spectrum of Compound 5x} \]

\[ \text{\textsuperscript{13}C NMR Spectrum of Compound 5x} \]
References


