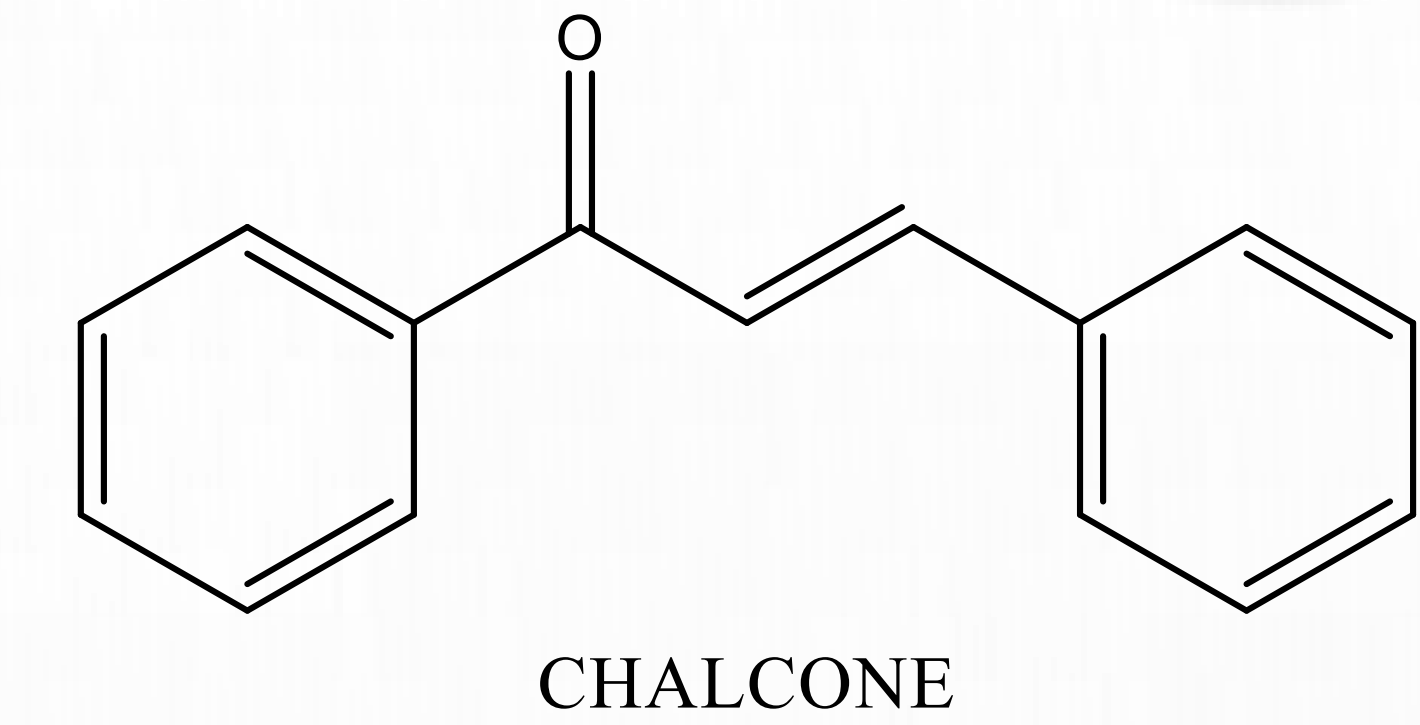


# Synthesizing and evaluating the biological effectiveness of novel anticancer agents



## INTRODUCTION

- Many cancer patients experience relapse<sup>1</sup>
- This is due to drug resistance<sup>2</sup>
- Drug resistant cancer is an obstacle in treatment
- Chalcones have a unique structure (E 1,3-diphenyl-2-propene-1-one)<sup>3</sup>
- Known to have anticancer properties<sup>3</sup>
- Can re-sensitize cancer to drugs<sup>3,4</sup>

## RESULTS

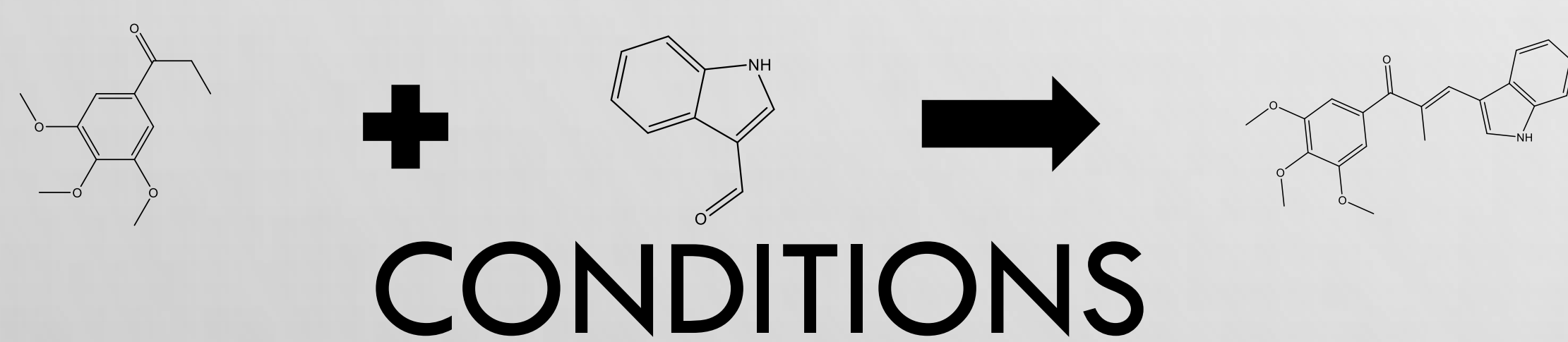
Trial	Solvent	Base	temperature	Result
1	EtOH	Piperidine	75°C	No reaction
2	EtOH	KOH	50°C; 60°C	No reaction; No reaction
3	EtOH	NaOH	rt	No reaction
4	Dry EtOH	Piperidine (molecular sieve)	80°C	~90 mg 26% yield

## FUTURE DIRECTION

- Continue making FC77
  - Larger quantities
- Make FC77 analogs
- Evaluate biological effectiveness

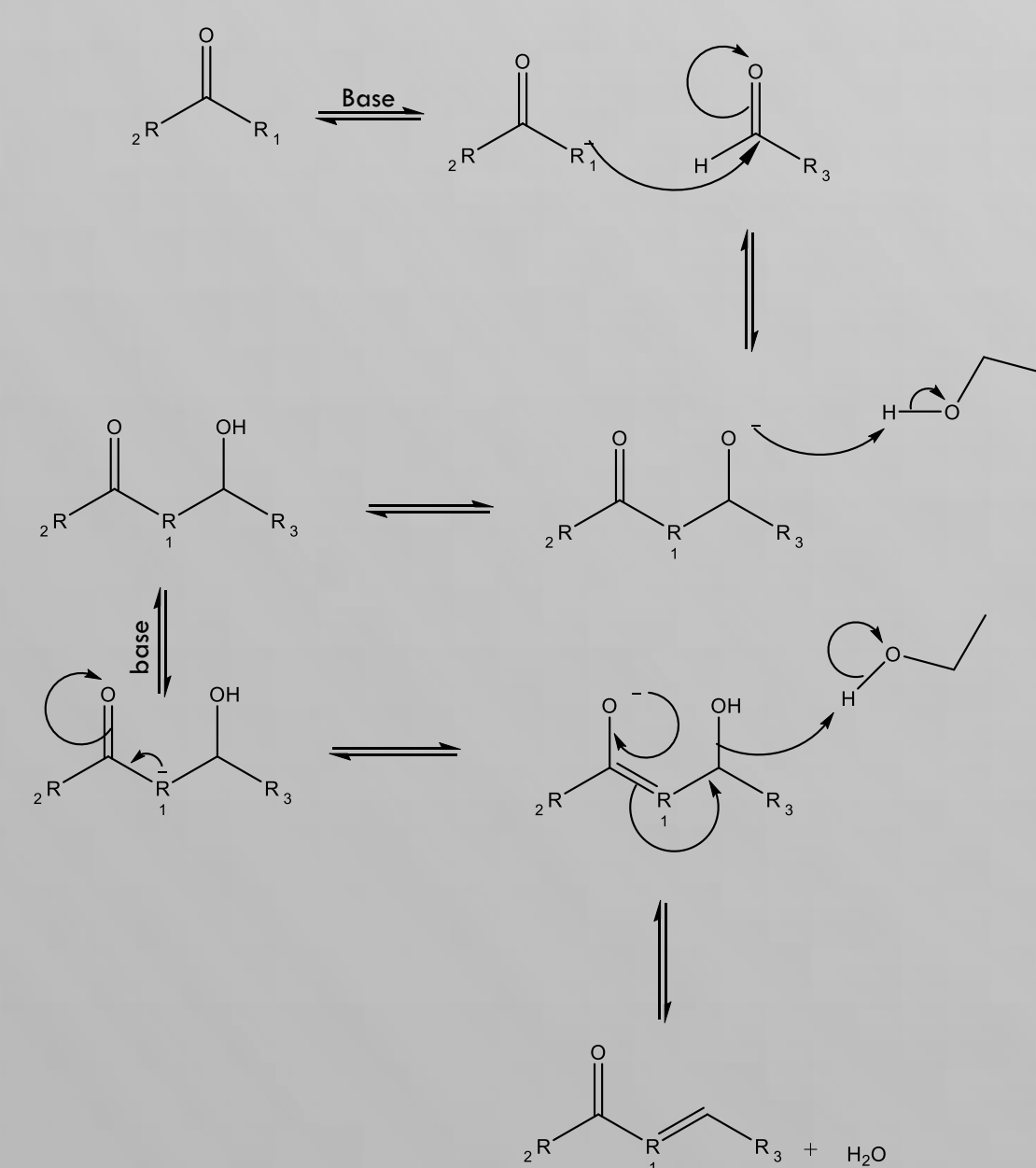
## SYNTHETIC PROCEDURES

### Overall reaction



Trial	Solvent	Base	temperature
1	EtOH	Piperidine	75°C
2	EtOH	KOH	50°C; 60°C
3	EtOH	NaOH	rt
4	Dry EtOH	Piperidine (molecular sieve)	80°C

### General Reaction mechanism (aldol condensation)



## CONCLUSION

- Unsuccessful in multiple conditions
- One factor remains constant
  - H<sub>2</sub>O present
- Presence of H<sub>2</sub>O could be the cause
- H<sub>2</sub>O is a product
- Pushes equilibrium backwards
- Supported by successful reaction

## REFERENCES

- <sup>1</sup>Shiple, Joshua L., and James N. Butera. "Acute Myelogenous Leukemia." 13 Apr. 2009. Web. 2 Oct. 2015
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- <sup>3</sup>Zhou, Bo, and Chengguo Xing. "Diverse Molecular Targets for Chalcones with Varied Bioactivities." Department of Medicinal Chemistry, University of Minnesota, Minneapolis, 22 July 2015. Web. 2 Oct. 2015.
- <sup>4</sup>Han, Yi, Meliana Riwanto, Mei-Lin Go, and Pui Lai Rachel Ee. "Modulation of Breast Cancer Resistance Protein (BCRP/ABCG2) by Non-basic Chalcone Analogues." *Modulation of Breast Cancer Resistance Protein (BCRP/ABCG2) by Non-basic Chalcone Analogues*. 1 June 2008. Web. 2 Oct. 2015.