

The James

 THE OHIO STATE UNIVERSITY
COMPREHENSIVE CANCER CENTER

RESULTS

A

Cardsia albicans cells

Overnight culture

Filter-sterilize CA medium media (CM)

Add sterile CM to yeast cells

B

Surviving fraction

Dose (Gy)

Condition

- Control
- Normoxic CM
- Hypoxic CM

C

24h YPD 24h CM 24h CM 24h CM

P-ATM

ATM

MRE11

Ku70

RAD51

Actin

D

DSB Repair Half-life (hours)

Control CA CM

E

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

F

24h YPD 24h CM 24h CM 24h CM

P-ATM

ATM

MRE11

Ku70

RAD51

Actin

G

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

H

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

I

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

J

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

K

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

L

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

M

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

N

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

O

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

P

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

Q

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

R

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

S

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

T

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

U

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

V

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Normoxic CM

W

log₁₀(P_{DNA})

Control

Hypoxic CM

Normoxic CM

DSB Repair Half-life (hours)

Hypoxia CM

Intratumoral *Candida albicans*:

- Is associated with decreased survival in NSCLC that received radiation
- Infiltrates tumors and causally affects radiation response in murine models
- Is not B or T cell dependent
- Can be rescued with oral fluconazole
- Produces metabolites that directly affect tumor cell survival after radiation

For more information, contact capel.snowden@osu.edu.
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American Lung Association (DS).

Radiation protection assay. (A) *Candida albicans* SC5314 was grown to log-phase growth in YPD before being sterile-filtered in a 0.22 μ m filter and subsequently added to a cell culture dish for downstream analyses. Cells were visualized with crystal violet or Alamar blue.

RESULTS

Univariate Analysis of Candida Abundance and Patient Survival

Cancer	N in analysis (High Candida)	Hazard Ratio (95% CI)
Head & Neck	1,937 (426)	1.28 (1.09–1.51)
Thyroid	774 (433)	1.29 (0.84–1.98)
Lung	1,775 (213)	1.31 (1.05–1.65)
Colorectal	1,580 (522)	1.36 (1.13–1.63)
Breast	1,985 (1,171)	1.40 (1.13–1.74)
Pancreatic	801 (528)	1.44 (1.17–1.79)
Ovarian	758 (182)	1.57 (1.24–1.99)
Gastric	218 (150)	2.20 (1.41–3.42)
Liver	198 (111)	2.32 (1.50–3.58)
Esophageal	118 (96)	2.40 (1.12–5.12)
Endometrial	917 (752)	2.40 (1.53–3.76)

High intratumoral Candida burden predicts worse overall survival across multiple cancer types. Pan-cancer analysis across 17 tumor types shows consistently elevated hazard ratios in high Candida patients. Microbial abundance estimated from bulk RNA-sequencing using (excitc).

NSCLC OR1EN

High intratumoral Candida burden predicts worse overall survival in NSCLC. High Candida burden is associated with lower overall survival.

Abundance

- Low Candida (n = 633)
- High Candida (n = 285)

Survival probability

Time (years)

p = 0.002

Univariate Analysis of Candida Abundance and Patient Survival

Clinical Factor	Hazard Ratio (95% CI)
Age	p = 0.000
BMI	p = 0.890
Sex - Male	p = 0.673
Radiation - Stage II	p = 0.043
Stage II	p = 0.213
Stage III	p = 0.000
Stage IV	p = 0.000
Current Smoker	p = 0.661
Previous Smoker	p = 0.757
High Candida	p = 0.001
Low Candida	p = 0.001

Squamous Cell Carcinoma

Hazard Ratio (95% CI)

[illegible][illegible]